

4

# OBSERVATIONS

ON

# HOSPITAL GANGRENE;

WITH REFERENCE CHIEFLY TO

THE DISEASE AS IT APPEARED IN THE BRITISH ARMY  
DURING THE LATE WAR IN THE PENINSULA,

WITH

PREFATORY REMARKS.

TO WHICH ARE APPENDED

CASES,

SHEWING HOW EXTENSIVELY APPLICABLE

THE ANTIPHLOGISTIC TREATMENT

IS

TO OTHER DISEASES OF THE ARMY.

BY

JOHN BOGGIE, M.D.,

SURGEON TO HER MAJESTY'S FORCES.

EDINBURGH: SUTHERLAND AND KNOX;

LONDON: SAMUEL HIGHLEY.

---


MDCCCXLVIII.



---

EDINBURGH:  
PRINTED BY NEILL AND COMPANY.

TO  
THE MEMBERS OF THE PROFESSION,  
THE AUTHOR  
DEDICATES THIS SMALL VOLUME,  
WITH EVERY SENTIMENT OF ESTEEM AND RESPECT.



Digitized by the Internet Archive  
in 2015

<https://archive.org/details/b22346661>

## CONTENTS.

---

	Page
PREFATORY REMARKS, . . . . .	1
State of the Military Hospitals at Bilboa, in August 1813,	6
The Antiphlogistic Treatment suggested, and introduced by the Author into the Cordileria Hospital, in place of the Stimulant plan, which had so long been adhered to in the cases of Hospital Gangrene, . . . . .	10
Letter of Dr (now Sir Charles) Forbes, the Superintending Medical Officer at Bilboa, stating the “unexampled suc- cess” which resulted from the adoption of the Author’s “ <i>opposite method</i> ” of treating Hospital Gangrene; con- taining also the favourable opinion of Dr Walker, Phy- sician to the Forces, and that of the late Dr Hennen, in his work on the Principles of Military Surgery, . . . . .	26
Letter of Dr A. Copland Hutchison, R.N., to a similar effect,	29
Letter of Dr James Wardrop, ditto, . . . . .	31
HOSPITAL GANGRENE, Treatise on, . . . . .	37
————— Causes of, . . . . .	55
————— Prevention of, . . . . .	80
————— Prognosis in, . . . . .	87
————— Method of cure in, . . . . .	88
————— General Treatment of, . . . . .	89
————— Local Treatment of, . . . . .	102

## APPENDIX.

	Page
ANTIPHLOGISTIC TREATMENT IN	
Pneumonia,—Private ———, 28th Regiment, case of, . . . . .	125
Pneumonia,—Serjeant ———, 28th Regiment, case of, . . . . .	126
Pneumonia,—Major Vernor of Scots Greys, case of, . . . . .	129
Ophthalmia, . . . . .	132
Syphilis, . . . . .	135
Gun-shot Wounds,—Major Gray, Rifle Bri- gade, case of, . . . . .	140
Gun-shot Wounds,—General Lluellyn, case of,	144

## PREFATORY REMARKS.

---

TWENTY-TWO years have now elapsed since my Essay on Hospital Gangrene was written. It was read in 1826, before the Medico-Chirurgical Society of Edinburgh,—was honoured with the approbation of its members, and thought worthy of a place in their published Transactions; but that valuable work, in which it first appeared, is no longer extant. On that account, and at a time when science\* is advancing rapidly, and the Me-

---

\* By the progress of Medical Science, almost every disease has been illustrated; but, more especially, those of the important organs of the chest. In the present day, through the researches of Avenbrugger, Laennec, and others, by mediate auscultation, &c., a much more correct diagnosis of these diseases has been attained than was formerly possessed. The subject of Asiatic Cholera has likewise been investigated, and a most luminous

dical profession generally are exerting themselves to discover new remedies, and to make improvements\* on the practice of their predecessors; and

---

Report on that disease has lately been made by a very talented officer, Mr Thom, surgeon of Her Majesty's 86th Regiment, at present in India (now published in that popular Journal, *The Medical Times*), which, it is to be hoped, may lead to some useful practical result. Mental diseases have also met with much attention, and the unfortunate subjects of them are now treated more judiciously, on a much more rational and humane principle than formerly, and with the happiest effect.

\* The use of Chloroform, as an anæsthetic agent, lately brought to notice by Dr Simpson, Professor of Midwifery in the University of Edinburgh, is one of the most important discoveries ever made in Therapeutics; and the improvement in the practice of Surgery has, of late years, been very remarkable. Among those who have distinguished themselves by their contributions to that effect, may be mentioned, as most conspicuous, Mr Syme, formerly Regius Professor of Clinical Surgery in this College, recently called to London to occupy the chair held by the late celebrated Mr Liston. In the advancement of Military Surgery, Mr Guthrie of London, by his great talents and experience, and the unremitted attention he has paid to the subject, has long since rendered himself eminent; and he may justly be regarded as the highest authority in that department, as well as a most successful contributor to the science in general.

Sir George Ballingall, our present Regius Professor of Mili-



when the aspect of the times has become changed, and has assumed a rather warlike appearance, which may, perhaps, ultimately end in hostilities, I have been induced to have the Essay reprinted, in the hope that it may be found useful, not only in the public services, but that the practice therein recommended may be extended, in similar cases, to that of civil life. This, indeed, has already, to a certain extent, been done, as will be seen by a letter (now submitted) which I was favoured with from Dr Wardrop of London, who for many years held the honorary appointment of Surgeon-Extraordinary to His late Majesty King George the Fourth, and having established a private Surgical Hospital there, had ample opportunity of carrying that treatment into effect,—modified, as it would

---

tary Surgery here, has also distinguished himself by the publication of a work on the Diseases of India ; and it is the more interesting, from its being the result chiefly of his own personal experience. The Subjects of which it treats, I understand, form a part of the Professor's course of Lectures, and shew how great must be the value of his unpublished Surgical prelections.

no doubt be, according to circumstances, and regulated by the judgment of that eminent surgeon.

I have also another object in view, namely, to shew more distinctly than has been expressed in the Essay, the claim I advanced of having introduced a new mode of treatment in Hospital Gangrene, viz., the antiphlogistic,—more safe and effectual, and attended with no expense compared with the old established, which till then had obtained, although unsuitable and very costly,\* and which may be termed the Stimulant, or Brownonian treatment.

I shall now endeavour to shew, as clearly as I can, the position in which, at that time, I found

---

\* The expense to Government of Bark, Opium, Wine, Spirits, &c., which formed an essential part of the Brownonian treatment, must have been very great; while the mischief resulting from it was incalculable. Besides the numerous deaths occasioned by it, the pensions alone to one hundred and fifty men who lost a limb each in the Cordiliera Hospital in the course of *one month*, at the rate of one shilling and sixpence a day to each private soldier, must have amounted to upwards of £4000 sterling per annum.

myself placed, and what induced me to propose so great an *innovation* on a practice long established, and sanctioned by the authority of the ablest, the most experienced and intelligent of the profession, and considered by them as the only appropriate treatment of so serious an affection.

My health having suffered much during the early campaigns in the Peninsula, I was under the necessity of retiring, for a short time, to England on sick-leave; at the expiration of which I returned to my duty. I landed at Bilboa in August 1813, and found that a great part of the men, wounded at the battle of Vittoria, had been sent thither. It was the principal Hospital station of the Grand Army. On reporting my arrival to Dr (now Sir Charles) Forbes, who was at the head of the Medical Department there,—a most active, zealous, and intelligent officer, he said I must remain at Bilboa and do duty at the Cordileria Hospital, adding, at the same time, “ You will find things there in a sad state, for the gangrene prevails to a great extent in that

Hospital, and has been fatal in many cases.” I was pleased at the thought of going thither, being anxious to study that disease; for, although, I had seen and treated many cases of gun-shot and other wounds in the General Hospitals at Colchester and Harwich, to which the wounded in the expedition to Holland in 1799 were conveyed,—in the York Hospital at Chelsea in 1800, and afterwards in Egypt and other parts of the world,—yet I never before had an opportunity of witnessing the gangrene, except on a very limited scale in the Royal Infirmary of Edinburgh, during my attendance there as a student, before entering the army.

I lost no time in repairing to the Cordileria, and found Mr Widmer, Surgeon to the Forces, a very zealous and experienced officer, in charge of that Hospital, which contained nearly 1000 wounded men. Dr Hennen was expected in a few days, on whose arrival Mr Widmer was to remove to another Hospital (the St Marmes), where the gangrene also prevailed. The Brownouian treatment

was enforced at the Cordileria, and had been so, I understood, from the time that the Hospital was established. On the arrival of Dr Hennen, who succeeded to the charge of that Hospital, Mr Widmer took his leave. Dr Hennen was a man of great talents, and an excellent operating surgeon,—indefatigable and enthusiastic in his profession,—of considerable standing in the service, and seemed quite familiar with the disease in question. I had conceived great expectations from his acuteness, intelligence, experience, and discernment, in so great an emergency, and hoped that a termination would soon be put to the dreadful sufferings I was every day witnessing. The same practice, however, to my astonishment and disappointment, was still continued, as in Mr Widmer's time, without any improvement, as far as I was able to discover. I soon saw that the means in use would not answer; for, although, as already mentioned, I had never before witnessed the gangrene in Army Hospitals, and, consequently, was unacquainted with the mode of treatment usually adopted there; yet,

by attending closely to the symptoms, I was convinced that the principle acted upon, at least in the present instance, was quite erroneous. In the first place, the accompanying fever was not typhus, as was generally believed, but of a different character. It was the synochus, or rather the synocha, of nosologists, attended, in some cases, with hepatic or bilious symptoms: neither did the exciting causes of the disease appear to be at all understood; for, although they might be various, and more than one may have been in operation at the same time, yet that to which I attached the most importance, it being the most obvious, was over-excitement, occasioned by the too free and indiscriminate administration of tonic and stimulating remedies, such as bark, opium, wine, spirits, &c., which appeared to me quite sufficient to produce and to perpetuate the disease. No change of treatment, however, seemed ever to be contemplated. The disease was making rapid progress every day, till at last the whole Hospital was over-run by it. As it was thought that no other general measures could be of

any use, amputation was had recourse to, and great reliance was apparently placed on that ; but, unfortunately, it was of little avail, for, in most cases the disease attacked the stump, so that in not a few the operation had to be repeated ; and, if I am not mistaken, there were instances where it was performed three times on the same individual. In one month, in the Cordileria, one hundred and fifty men had each a limb amputated.

When things were in this state, Dr Hennen received an order to proceed to Vittoria on a particular duty, which detained him there two months, during which time the charge of the Hospital devolved upon me.

Seeing that all the means hitherto used had failed, I resolved to take the responsibility of carrying my own views into effect, notwithstanding the prejudices and opposition of all my professional brethren : for, unless a totally different practice were pursued, I was convinced that a very



great proportion of the wounded in the Cordillera, which at that time contained more than eight hundred men, must lose their lives, or be rendered useless as soldiers, by the amputation of their limbs. Under such circumstances I could not but feel much anxiety for the safety of these men, seeing that, from the 31st July to the 20th October, before the progress of the gangrene was checked, not fewer, I think, than two hundred and fifty deaths had occurred in that Hospital, and more than one hundred and fifty amputations had been performed ; and I felt assured that had a modified antiphlogistic treatment been adopted from the commencement, the gangrene might have been in a great measure, if not entirely, prevented, and the number of amputations and deaths been comparatively few. But that alarming state of things was soon changed, as will be seen immediately, when the antiphlogistic treatment was *fully established*.

I commenced by causing a number of cases to be selected, by way of experiment. The antiphlo-



gistic treatment was rigidly enforced,—modified, however, according to circumstances. Blood-letting was used in some; but when the symptoms were less urgent, or there was anything to contraindicate it, that remedy was dispensed with, and the result was most satisfactory. The same treatment was tried in others with equal success. Prejudices at last began to give way, and in a short time afterwards, the *newly adopted practice became general*. The benefit resulting from that change was soon apparent,—the great mortality almost immediately ceased, and amputation was seldom necessary. Numbers, after a time, were enabled to join their corps, and again take the field, who, had they remained in Hospital under the old treatment, must, in all probability, have lost a limb and become a burden on the State, if they were so fortunate as to escape with their lives. In consequence of our success at the Cordillera, the same treatment was adopted in all the other Hospitals at that station, and the result was equally favourable.

Never in my life was I more gratified than on that occasion,—happy at the thought of having suggested an important improvement in the treatment of a very formidable disease ; and, by carrying it into effect, done to my country a good service, upon so extensive a scale as may, perhaps, never again fall to the lot of any individual of the British army either to witness or to perform.

Before this favourable change had taken place, the Inspector-General, Sir James M'Grigor's attention had been arrested by the returns made to him from Bilboa, shewing the great mortality in the Hospitals at that station, which caused him much concern, as will be seen by a letter he addressed on the subject to Dr, now Sir Charles Forbes, the Chief Medical Officer there. It was in these terms :

“ 3985 HEAD QUARTERS, 19th Oct. 1813.

“ SIR,—Referring to your last fortnightly return, I am sorry to see so great a mortality as I observe to prevail at the station under your superintend-

ence. I find that not fewer than 304 deaths have occurred to the 24th September at Bilboa, for the short period of its establishment as an Hospital Station.

“ While I am very sensible of the value of your superintendence, and feel assured that neither neglect nor inattention would be permitted in any officer acting under you, I am desirous that you will take the subject of so considerable a mortality into your mature consideration, and report to me the causes. I have the honour, &c.

(Signed) “ J. M'GRIGOR.”

“ To Dr FORBES, Bilboa.”

A copy of the foregoing letter was sent to me along with a communication from Dr Forbes, to the following effect ;

“ BILBOA, 24th Oct. 1813.

“ SIR,—Having received a letter from the Inspector-General of Hospitals, of which I inclose

you a copy, I request you will take the subject of the mortality which has prevailed at this station into your deliberate consideration, and report to me your opinion of the cause thereof in a detailed and circumstantial manner.

(Signed) “CHARLES F. FORBES, M.D.,  
Deputy Inspector of Hospitals.”

“To J. BOGGIE, Esq.,  
Surgeon to the Forces.”

I lost no time in replying to this official communication, as follows :

“CORDILERIA HOSPITAL,  
27th October 1813.

“SIR,—Being called upon to give my opinion as to the cause of the mortality which has occurred at this Station, I have the honour to report to you what appear to me to be the probable causes of that mortality, in as far as the Cordileria Hospital is concerned.

“The disease which has prevailed here (Hospital

Gangrene) is, perhaps, as formidable as any with which we are acquainted. Even in the best regulated Hospitals in civil life, it never appears without causing alarm. This certainly must arise from the experience of its destructive nature, the best and ablest practitioners scarcely knowing how to act when so dreadful a malady shews itself. If this be the case in civil life, we can scarcely be surprised at the ravages which may be committed by such a disease in a great Military Hospital, where it may prevail in a tenfold greater degree,—where there are frequently difficulties of every description to contend with, and where, above all, there is often, *too often*, an almost total want of efficient medical officers,—where the charge of multitudes of men is from necessity given to inexperienced assistants, many of whom, perhaps, never heard of such a disease, before they were called upon to treat those labouring under it in every form. With the best intentions, their exertions, if not injurious, are at least ineffectual. They are told that the disease in question is Hospital Gangrene. This gives the idea of

bark, opium, wine, and other stimulants of a still stronger quality ; and certainly a most liberal use is made of them, for they are prescribed indiscriminately to every one, without regard to the fever, degree of inflammation, &c., &c.

“ This I found to be actually the case on arriving at the Cordileria about two months ago. No rational mode of treating the disease was established there. If a wound looked at all ill, stimulants were ordered in double quantities, till at last the very disease was brought on which they were so anxious to prevent. I was convinced of the destructive effect of such a practice, and did all I could to point out what appeared to me to be the best mode of treating so frightful a malady. My ideas on the subject were mentioned in the last monthly report, a few days since ; and in my answers to the queries of the Inspector-General of Hospitals, some time ago.

“ The disease, though it still continues, is cer-

tainly, (owing, I presume, to the different mode of treatment which is now pursued), not of that malignant character which it lately was; and seems to be becoming every day more mild. Numbers, whose constitutions are already ruined by it, must yet undoubtedly be lost; but a more rational treatment is now established, which will in the end, I doubt not, be found to be the most effectual.

(Signed) “J. BOGGIE,  
Surgeon to the Forces.”

“To Dr FORBES,  
Deputy-Inspector of Hospitals,  
&c., &c., &c.”

Towards the end of December, Dr Hennen returned to Bilboa from Vittoria, where he had been for two months, and resumed the charge of the Cordillera Hospital; and, early in January following, I received an order to join the army in France. After my departure from Bilboa, Sir Charles Forbes received a communication from the Inspector-General, Sir James M'Grigor, with a question from the Army Medical Board in London, respecting the principle



on which the treatment of the Gangrene at Bilboa was adopted, and of its success. By the kindness of Sir Charles Forbes, I have been favoured with the Reports of two of the medical officers in charge of Hospitals at that station, viz., Dr Walker, Physician to the Forces, in charge of the Burcenea, and Dr Hennen, then Surgeon to the Forces of the Cordillera, drawn up on that occasion ; from each of which I shall give a short extract, that the opinions of these two eminent men may be recorded here. Dr Walker, at the beginning of his very valuable Report, says, “The treatment there specified, viz., Emetics and Purgatives at the commencement, and afterwards, bark, opium, and wine, is very nearly that which has been followed in Typhus Fever, the constitutional affection having generally appeared to be of the typhoid type ;” and, at the conclusion, very candidly admits,—“while I give it as my opinion, that the type was during the autumnal months decidedly typhoid, I cannot help acknowledging, that I am afraid, from the immense duty the medical officers had to perform, we had, in



many instances, not paid sufficient attention to the symptoms of particular cases, but (noticing only the leading and common features) generalized our practice too much; and, in some instances, have carried the stimulant plan too far, or, have used it in cases where, perhaps, a contrary plan of treatment was called for, and would have proved more successful." According to this Report the mortality was very great. Dr Walker adds, "I think more than one in three died in the Burcenea Hospital." It is also mentioned in the report, that "since the setting in of the cold weather, the type of the fever seems to have changed entirely, and to have become inflammatory, and, therefore, a very opposite plan of treatment has been followed, and bleeding has been very generally employed."

Dr Hennen, in his very able Report, gives a full and accurate account of the symptoms and history of the disease, as far as was *then* known, and says, "The indications of cure were nearly the same as in typhus fever, modified by the circumstances or

combinations of local disease. I must observe, however, that about the middle of October, a change of type began to shew itself very distinctly, which naturally induced a change of practice; and the depleting plan, which then commenced, has been continued and gradually increased to the present period, when we trust principally to venesection both as a cure and as a preventive; and, doubtless, on the approach of summer or autumnal weather, we must be prepared for a gradual reversion to the stimulant plan. The proportion of deaths, in the autumnal months, was nearly one in three and a half; in the present, about one in eight, many of them have been occasioned by the absorption of putrid matter, long after the spreading of the gangrene had ceased, and many from the previous irritation."

In the Essay, under the Fifth head of the Causes of the Gangrene, I have noticed Dr Hennen's opinions on that point; and although my respected friend Dr Walker took nearly the same view of the

disease, and adopted a similar practice, the remarks which I made in the one case are, I think, applicable to both. It is not necessary, therefore, to repeat them here.

But this is not the only instance in which I have known such opinions to obtain as those now quoted. I had, more than once before that, seen Pneumonia prevailing extensively in the army ; or a fever supposed to be Typhus, attended with urgent pulmonic symptoms, viz., Dyspnœa and cough, with a sense of weight in the chest, and great debility, but without any acute pain, and considered to be Typhoid Pneumonia, treated on the same principle as was the Gangrene, now under consideration ; where, from the apprehension of increasing the debility, the remedy on which the safety of the patient in all probability might have depended, viz., blood-letting, general or local, was not employed, and the cure was attempted by the administration of stimulating remedies, such as camphor, ammonia, opium, wine, spirits, &c., with the

help of mild aperients, and counter-irritation by blisters on the chest; but the consequences were deplorable—the mortality was very great.\* With

---

\* Typhoid Pneumonia, when it does occur in the army, is now treated with much greater success, more on the antiphlogistic principle; and blood-letting at the commencement, general or local, according to circumstances, is, I believe, never omitted. The great debility which is occasioned by the congestion of the lungs, in the first stage of the disease, is more effectually relieved by the abstraction of blood than by any other mean. Local bleeding by cupping, aided by mild aperients, and counter-irritation by blisters on the chest, along with the mercurial treatment by calomel and opium, has been found, in many instances, of great benefit; while stimulating remedies of all kinds are more sparingly administered. In crowded cities, and among the poor, the aged, and debilitated, who are the subjects of that disease in civil hospitals, a somewhat different treatment should be pursued. Bleeding must be employed more cautiously, and wine, with other stimulants, may, perhaps, be used more freely, and at an earlier period with advantage.

With regard to Typhus Fever uncombined with local disease, a single remark or two may be made here. In this city (Edinburgh), among the poor, and particularly the Irish poor, who congregate in great numbers in the garrets and cellars, and other ill-ventilated places of the old town, typhus fever has for years past been prevalent, and this last year was very fatal, and extended in some instances to the higher ranks. It has always, I understand, been treated on the stimulant or Brownian principle, but with

such examples in my recollection, I could not approve of the practice adopted at the Cordileria Hospital; for, even admitting that the fever was Typhus, such excessive stimulation as was there used could not be required, and was much more likely to be injurious than useful. In Typhus fever, blood-letting has often been employed with the best effect; and in Hospital Gangrene, complicated with a fever of the typhoid type, a modified anti-phlogistic treatment appears to be clearly indi-

---

very little success. It appears to me, that another mode of treatment should be adopted, or, at least, that a trial might be made of it. By the mere removal from the noxious air of their crowded dwellings to a pure atmosphere, much good might be done; and, followed by a judicious medical treatment, on the modified anti-phlogistic principle, with a more sparing use of wine and other stimulants, the most beneficial consequences might be expected—a great saving would arise to the funds of the Hospital, and many lives, I am convinced, might be preserved. I have seen Typhus Fever in Ireland among the poorest of that country, and have been surprised at so many instances of recovery under circumstances apparently the most unpromising; while others, with better prospects, and with every assistance and means at hand when attacked by the disease, were carried off.

cated. These opinions I formed soon after arriving at the Cordileria, and have maintained ever since.

The Gangrene was a subject which interested me very much, and the more so, as it was quite new to myself, and I saw that neither the nature nor the causes of the malady were at all understood. A fine field for observation was then before me, and from which, I was persuaded, a great deal might be gained. Much good, I thought, might be done by proper treatment; but the practice *then* followed appeared to be very objectionable.

Before concluding these prefatory remarks, I beg to submit the evidence which I possess, of my having originated, and introduced, a new practice in the treatment of Hospital Gangrene in 1813, *until then unheard of*, and which, when adopted, was attended with the most gratifying results. The following letters will, I trust, be sufficient to establish the legitimacy of the claim I have advanced on that

particular subject. My letter to Dr Forbes, dated 25th July 1827, was in these terms :—

“ MY DEAR SIR,—As I lately presented a Memorial to the Secretary at War relating to my general services, and more particularly pointing out a specific service which I performed at Bilboa in 1813, by arresting a gangrene which was causing very great destruction in the Hospitals there ; and, as, from your official situation as Superintending Medical Officer at that station, you had an opportunity of ascertaining the great mortality which the disease occasioned, and witnessing the various modes of treatment pursued by the different individuals in charge of Hospitals, I request you will be pleased to state, whether or not any progress had been made in subduing that disease, before the antiphlogistic treatment which I established, was introduced.

“ I am, my dear Sir, very sincerely yours,

(Signed) “ J. BOGGIE.”

“ To Dr Charles F. Forbes,  
&c., &c., &c.”



Dr Forbes's reply to the above was as follows :—

“ ARGYLL STREET, *July* 25, 1827.

“ DEAR SIR,—In reply to your letter of this day's date, I beg to state, that you were employed, with Staff-Surgeon Hennen, in the Cordileria Hospital at Bilboa in the year 1813, which contained one thousand men, the greater number of whom were affected with Hospital Gangrene.

“ Wine and bark, in short the stimulant plan, had hitherto been employed ; but the want of success of this mode of treatment, led you to propose the antiphlogistic, or opposite method, by bleeding, &c.

“ During the absence of your senior, Mr Heunen (for two months at Vittoria, as an evidence on a court-martial), the charge of the Hospital devolved upon you, whereby you had an opportunity of carrying the antiphlogistic plan of treatment into ef-



fect, to the fullest extent ; and it was attended with unexampled success.

“ I subjoin the following extract of a letter from Dr Walker, Physician to the Forces, employed at Bilboa at the same time.

“ ‘ *January 23, 1814.*—I have the honour to acknowledge the receipt of your letter forwarding an extract of one from the Army Medical Board, requiring to be informed of the principle upon which the treatment of Hospital Gangrene at that station was adopted, and of its success.

“ ‘ Staff-Surgeon Boggie, who has for a considerable time had the more immediate charge of the patients of this description (Hospital Gangrene) in the Cordileria Hospital, has carried the depleting plan to a great length, with the utmost success. —To Dr Forbes, Inspector of Hospitals.’

“ In referring to the second edition of Dr

Hennen's work on the Principles of Military Surgery, I find the following note, page 222 :—‘ This was the mode of treatment I found established at the Hospital, and which was continued for some time, until our want of success generally, and the abuse of stimulants in some particular instances, together with the obviously inflammatory nature of the disease, forcibly arrested the attention of Staff-Surgeon Dr Boggie, to whom the merit of introducing venesection at the Cordileria is due.’

“ Believe me to remain,

“ Yours faithfully,

(Signed) “ CHAS. F. FORBES.”

“ To Dr BOGGIE,  
&c., &c., &c.”

The next document, which I beg leave to produce, is a letter received by me from the late Mr Copland Hutcheson, an eminent surgeon in the Royal Navy, and author of a valuable work on Naval and Military Surgery.

“ HIS MAJESTY’S DOCKYARD, SHEERNESS,  
11th June 1827.

“ MY DEAR SIR,—I have received your letter, accompanied by your pamphlet on the subject of Hospital Gangrene, as it occurred so extensively, and with such destructive effects, among the British troops in the Hospitals at Bilboa during the year 1813; and I have noticed, in Dr Hennen’s work, that he gives you credit for having introduced a much more efficient mode of treatment of that disease than had been, *till then*, pursued in army practice.

“ As I have seen much of this disease, and devoted to it a chapter in my work on Naval and Military Surgery, I may be permitted to say, that according to my experience, you were not only correct in your treatment, as the result proved, but you merit great praise, as well as the best thanks and high consideration of the Army Medical Board, for having thus been the means of saving the lives and limbs of many hundred men suffering under

this very untractable malady, and thereby rendering the army more efficient.

“ I am quite sure, that your services, even if they had been confined to this particular occasion, must procure for you the approbation and support of the Director-General, Sir James M'Grigor, who is always so much alive to the interests of the sick and wounded soldier ; and to the promotion of medical officers, like yourself, who have professionally distinguished themselves.

“ With many thanks for the kind present of your work, which I highly value,

“ I am, my dear Sir,

“ Very faithfully yours,

(Signed) “ A. COPLAND HUTCHESON.”

“ To Dr Boggie,  
21 Carmarthen Street,  
Bedford Square, London.”

The opinion and advice of Dr James Wardrop were conveyed in the following terms :—

“ CHARLES STREET, ST JAMES’S,  
*August 4, 1827.*

“ MY DEAR SIR,—On your return from the Peninsula, in the year 1814, you then stated to me the novel practice you had so successfully adopted in the treatment of Hospital Gangrene, which had prevailed, to so unprecedented an extent, among the British troops in the Hospitals at Bilboa.

“ I am ready to confess and avow publicly, that that communication, notwithstanding its discrepancy to the generally-received medical doctrines, opened to me a new and important view of the treatment of that class of diseases ; and I have the greatest pleasure in assuring you, that I have since had abundant opportunities, in civil life, of successfully treating the same class of diseases on the new principles you established, with such signal benefit, in our Military Hospitals.

“ I need scarcely add, that I think it your duty to publish to the world your observations and ex-

perience on this subject, as I am convinced, in so doing, you will confer a benefit on Society, as well as on the Public Services.

“ I am, with much esteem,

(Signed) “ JAMES WARDROP.”

“ To Dr Boggie.”

In thus most respectfully submitting these documents, &c., to the Profession, I consider it due to Sir James M'Grigor, Bart., the Director-General of the Army Medical Department, to subjoin the copy of an attestation by him, respecting my humble services during the late war, as follows :—

“ 5th November 1822.

“ I hereby certify, that Dr John Boggie, Surgeon to His Majesty's Forces, now on half-pay, has served in the Medical Department of the Army, in various situations during the late war, and that he, on many occasions, exhibited proofs of superior skill and attainments in his Profession.

(Signed) “ J. M'GRIGOR,  
Director-General, Army Medical Department.”

I cannot conclude these remarks, without mentioning the attentions I have, at all times, experienced from Sir Charles Forbes, K.C.H. ; and, more particularly, for the assistance he has afforded on this occasion, by supplying me with some official documents connected with the interesting subject I am about to lay before my Professional Brethren ; rendering it a most agreeable duty to acknowledge, in this place, the great obligations he has laid me under ; and for which acts of official consideration, and personal friendship, I shall never cease to retain the most lively feelings of gratitude and esteem.

EDINBURGH, 16 BROUGHTON PLACE,  
15th May 1848.





OBSERVATIONS  
ON  
HOSPITAL GANGRENE.



## OBSERVATIONS, &c.

---

THE efforts of Nature are in nothing more conspicuous than in repairing the various injuries incident to the living body from wounds and other accidents; but causes occasionally supervene to counteract these efforts, which Nature, unaided, is unable to overcome, and which terminate often not only in the destruction of a part of the body, but even in that of life.

Of these causes, none appear to me more deserving of an attentive consideration than Hospital Gangrene, which I propose as the subject of the following observations, and which may be regarded as the most serious affection to which wounded surfaces are liable; as it destroys without distinction, and involves, in one common mass, all the

textures which it attacks. It has, in this country, been denominated Contagious Gangrene, Gangrenous Phagedæna, Malignant Ulcer, and, by the French writers, Gangrene humide des Hôpitaux, Pourriture d'Hôpital: I shall use the name Hospital Gangrene,\* as a general term, and point out what I wish to be understood by that of Contagious Gangrene and Gangrenous Phagedæna.

This affection prevails in various situations, but it is seen in its most aggravated forms in Military Hospitals; and deplorable, indeed, are the consequences sometimes resulting from it; so that, perhaps, there is no disease more destructive than this to an army on service. During the late war in the Peninsula, if I mistake not, there was no malady more fatal, in proportion to the numbers affected by it; nor was there any by which a greater num-

---

\* Hospital Gangrene does not appear to be the most appropriate name for this disease, as it will be seen that it is not exclusively confined to Hospitals. Perhaps Contagious Gangrene, or Gangrenous Phagedæna, would be better.

ber of men were rendered unfit for further service. To the Military Surgeon, in particular, it must be an object of the deepest interest.

No doubt much valuable information is to be found in the works of those who have lately written on this subject ; but authors differ so much in the statements which they have given as to the nature of the affection, its causes, and treatment, that it would be difficult indeed for any one who had not had frequent opportunities of witnessing the disease, to say which author is the most correct. I shall, therefore, endeavour to give an account of the disease as it occurred to myself, together with the practice followed, as also what I conceive to be its causes ; mentioning, at the same time, the opinions of some of those writers who have described the same affection.

There is no reason to believe Hospital Gangrene to be a disease of recent origin : it must have existed from the earliest period ; and, accordingly, we

find allusion made to it, or, at least, a gangrenous affection supervening on wounds and ulcers, recorded in the works of the oldest writers. The only doubt whether the disease mentioned by them is the same as that under consideration, seems to arise from their not having noticed its contagious nature; that circumstance, however, I conceive is no proof of its not being the same disease; for it would appear that the ancients were but little acquainted with the subject of contagion or infection, and that point even now is by some disputed.

Although it was observed by Lamotte in the Hotel-Dieu of Paris in 1722, and by Ambrose Paré and others even prior to that date, no one among the moderns before Pouteau, whose posthumous works were edited in 1783, seems to have described it very minutely. Since that time, however, many writers have given it a place in their works, and some separate Essays on the subject have been published.

Hospital Gangrene has been found to prevail very often in ships of war, and in Naval Hospitals, where great numbers of wounded had been crowded together. It has also existed in Hospitals by no means crowded, and where every attention was paid to ventilation; and it has been known to prevail, and that extensively, among wounded who had never been in Hospital, as I shall afterwards relate. It shews itself at all seasons of the year; but authors are not agreed as to that in which it chiefly prevails. Boyer seems to think that it is most frequent after the great heats of summer, and during a continuance of southerly winds.\* I hope to be able to prove that it will be found in its greatest virulence during a continuance of very hot weather.

There are two forms under which Hospital Gangrene usually appears, viz., the Sloughing and the Phagedenic; they, for the most part, exist sepa-

---

\* Vide *Traité de Maladies Chirurgicales*, tom. i., p. 321.

rately, but they are not unfrequently combined in the same sore. The first I would name Contagious Gangrene; the second Gangrenous Phagedæna. Professor Delpech of Montpellier, who has given a very excellent account of this disease, mentions four different forms. The first he denominates the Ulcerous (Ulcereuse); the second the Pulpous (Pulpeuse); the third and fourth seem to be varieties of these two.\*

When a wound or ulcer is affected with contagious gangrene, it becomes painful and swollen, loses its healthy florid appearance, and the granulations, which were small and distinct, become flabby, and appear sometimes as if they were distended with air; at other times, vesicles containing a watery-coloured fluid, or bloody serum, have been observed, and the sensation in the sore has been described as resembling the stinging of a gnat. The secretion of pus is suspended; the wound is

---

\* Vide Memoire sur la Pourriture d'Hôpital, p. 4, *et seq.*



dry, and covered with a tenacious viscid ash-coloured matter, which adheres firmly to the surface. When this morbid state has existed for some time, a discharge takes place of a thin ichorous matter, of a very peculiar smell,\* the pain increases, the edges of the wound are reverted, and in general assume a circular form; an erysipelatous redness surrounds the wound, and sometimes extends to a great distance, even over a whole limb; the neighbouring glands, as those of the axilla or groin, swell, inflame, and sometimes suppurate; febrile symptoms become apparent; the pulse is accelerated, full, and strong; the heat of the surface is much increased; the patient com-

---

\* The smell is so peculiar, that I have often been sensible that the Gangrene had commenced before the wound was uncovered. It may be compared to the cadaverous smell arising from the bodies of some individuals dying of certain diseases, more especially those of the Febrile class, and which may be regarded as one of the worst of symptoms; and, from that alone, I have been able, in these diseases, to prognosticate the death of persons days before the event occurred, and even when no other very alarming symptom was manifest.

plaints of nausea and thirst; the tongue is covered with a whitish or brown crust; and the bowels are in general constipated. The inflammation goes on increasing, the thin ichor continues to be discharged in great quantity, and a thick slough, apparently of coagulable lymph or fibrine, like melted tallow, covers the whole surface of the wound; the fetor becomes intolerable, and the pain quite insupportable. In the last stage, there is, in general, an oozing of blood from the surface of the wound, and not unfrequently distinct hæmorrhage, from the corrosion or destruction of the larger bloodvessels. Sphacelus takes place to a greater or less extent; the strength of the patient fails; the pulse sinks; his countenance becomes collapsed and altered; the skin is bedewed with a clammy sweat; and a diarrhœa with hiccup coming on, the scene very soon terminates.

Though this is the most common form of the disease which I have seen, as it occurs in a recent wound, and in strong healthy men, who are the or-

dinary subjects of it, yet I am well persuaded that the fever which accompanies Hospital Gangrene is not always of so phlogistic a character. It has been often observed to partake more of a typhoid type; and it is of the utmost consequence in practice to attend to this distinction, as it will be found, that what would be a valuable remedy in the one case, might, if carried to any extent, be very pernicious in the other. The not attending sufficiently to this circumstance, that is, to the phlogistic, or to the typhoid type of the fever, has, I am convinced, often led to fatal mistakes, and seems to be partly, at least, the cause of that great diversity of opinion among medical men regarding the best mode of treating this very dangerous affection.

The other form in which the Gangrene usually manifests itself is more of a chronic nature; appearing then seldom in a recent wound. Most of the cases which I have seen of it have been in those of some standing, and in patients who had been long in Hospital, many of whom had suffered

attacks of that disease in the more acute form ; after recovering from which, and when the wound was to all appearance doing well, the granulations healthy, secreting good pus, and sometimes even nearly cicatrised, a small dark-coloured spot or ulceration has appeared, most commonly on the edge of the sore, varying in its dimensions from the size of a millet seed to that of a split pea.

This little ulceration was, in general, of a circular shape, its edges ragged, its bottom unequal and excavated, and secreting a matter of the same peculiar smell as in the sloughing form already described. Ulcerations of the same kind not unfrequently appeared in other points, which, spreading in all directions, united, and soon extended over a great part of the wounded surface. At times, this ulceration has been known to go on, and to cause very considerable destruction of parts, without the system appearing to be much affected by it ; but most frequently after it had spread to a certain extent, symptoms denoting constitutional irritation

became apparent ; these were, nausea and loss of appetite, thirst, foul tongue, restlessness, a small and quick pulse, and heat of skin. After the febrile symptoms had appeared, the progress of the ulceration was more rapid, and very often extended beyond the limits of the original sore ; the discharge became bloody, and the fetor peculiar to this affection more offensive. Sphacelus in many instances took place, and some time before death the same train of symptoms occurred, already described as taking place in the last stage of the more acute form of the disease. This is the depascent, or phagedenic, form of Hospital Gangrene, or what may be called Phagedæna Gangrænosa.

It would appear, that, in the milder cases of this disease, the skin and cellular membrane are the parts originally and principally concerned, and that it may sometimes be confined to these textures ; but that, in more violent cases, one structure is destroyed after another, so that the muscles, ligaments, and tendons, together with the bloodvessels

and nerves, are involved in the disease, become disorganised, and slough off; even the periosteum is not exempt from its influence, and the bones being deprived of their covering, sometimes become affected with caries.

Dr Walker, in his very interesting Report, already quoted in my Prefatory Remarks, says, "It is always the skin and cellular membrane that is primarily attacked; and I have frequently seen, after a most extensive slough had separated, that the muscles had not been in the least affected, but that the cellular membrane connecting them to each other had been so completely destroyed, that they remained as if clean dissected, and might have served as a demonstration in myology. On the separation of the sloughs, bleeding was a very common occurrence, and not unfrequently, although repeatedly checked, at last wore out and carried off the patient."

Dr Hennen also, in his Report, remarks that,

“multiplied dissections and observations on the living body, shew it to be originally a disease of the skin and cellular substance (whether loose or condensed) through which it spreads to a much greater extent than on external inspection it seems to do. When these fall off, the muscles appear as florid as in perfect health, and as completely dissected as the most accurate knife could render them. In some advanced stages, however, they also slough away, as do the bones, the cellular substance which connected the muscular fibres participating in the disease.”

The duration of the disease varies in different individuals. If not checked by the operation of remedies, it may continue for a period of from fourteen to twenty days, or even longer; but it often terminates much sooner, sometimes as early as the third, fourth, or fifth day, either in recovery or death. When once attacked, the patient, even when convalescent, is very liable to suffer a relapse, and repeatedly, too, as I myself can testify.



Lombard has seen this happen eight times in the same individual;\* and Dr Hennen mentions a case in which the patient survived twelve different attacks, but sunk under the thirteenth.† Under such circumstances, it was not to be expected that they could ultimately recover; accordingly, most of those so affected, being completely exhausted, lingered for a time, and then sunk under the hectic fever which invariably attended.

When a patient is beginning to recover from this disease, there is an abatement of the febrile symptoms; the local inflammation subsides, healthy pus is secreted, small florid granulations spring up, and the sloughs separate without being renewed. Specific sores, such as venereal, scrofulous, and variolous, are thought to be less liable to this affection than simple sores. This may, perhaps, be the case in some degree, but they are by no means al-

---

\* Clinique Chirurgicale, p. 268.

† Military Surgery, p. 225.



together exempt; it has been repeatedly seen to attack cancerous and venereal sores,\* and the progress of the disease is, in some instances, quite alarming; and a case is mentioned by Dr Hennen of a soldier of the Waggon Train, who was sent into the Hospital at Bilboa, with an open bubo in the groin, and under the influence of mercury, who was carried off by this disease in forty-eight hours,—the gangrene affecting the sore almost instantly, eroding the great vessels in the neighbourhood, and destroying the abdominal parietes to a great extent.† This case I witnessed myself.

In that form of the disease which appeared in the Artillery Hospital at Woolwich, as described by Dr Rollo, specific sores were not affected, though such patients were in the same wards. This is just what I should have expected; that form of the disease being apparently purely local, and not having

---

\* Thomson's Lectures on Inflammation, p. 460.

† Military Surgery, p. 218.

the power of extending its influence, at least through the medium of the atmosphere.

A great peculiarity in the phagedenic form of the disease is, that different actions, such as the ulcerating, suppurating, and cicatrising, may frequently be seen going on in one sore at the same time. During the prevalence of the Hospital Gangrene at Bilboa, this peculiarity was often observed; the same thing was remarked by Dr Rollo at Woolwich.\*

After military punishments, in consequence of neglect, improper treatment, or other causes, gangrene sometimes occurs. I have seen some frightful cases of that kind. And, from what has been stated in the description of the disease, the appearance and consequences of it may be easily imagined. Happily, however, for the sake of humanity, corporal punishments, both in the Navy and Army,

---

\* Treatise on Diabetes, vol. ii., p. 261.

are now inflicted with much greater discretion than formerly, and, indeed, are but seldom heard of; though it has been judged inexpedient to dispense with them altogether.\* In warm climates phagedæna is very apt to ensue from this cause; and it is, perhaps, not out of place here to mention, that the most effectual remedy in speedily healing wounds incidental to punishments, and, consequently, in preventing the bad effects which sometimes result from them, is the immediate application of a spiritous embrocation. The aqua ar-

---

\* They who take an interest in the wellbeing of the army will be glad to learn, that by a late order of the Commander-in-Chief, His Grace the Duke of Wellington, no soldier shall in future ever receive more than fifty lashes by the sentence of a Court-Martial. It is not probable that, in ordinary cases, a punishment limited to that extent could do much serious injury to a man in perfect health; but to prevent the possibility of gangrene ever occurring, flogging should never be carried so far as to abrade or lacerate the skin. This humane order has raised His Grace higher, if possible, than ever in the public estimation. On subsequent inquiry, I am informed that flogging in the army is now virtually abolished, and that other modes of punishment are substituted, such as confinement, banishment, &c.; but that, in addition to these, in aggravated cases, fifty lashes may still be awarded.

dente, a sort of brandy which was issued to the troops in Portugal and Spain, I found most beneficial in such cases: for the first twenty-four hours I was accustomed to use it undiluted, and after that time mixed with water, much on the same principle as oil of turpentine and spiritous applications have been employed in scalds and burns. But, as that was a rather expensive remedy, and could not always be had, lotions of cold water and vinegar were used instead of it, and answered very well.

From all the phenomena of the disease, we may be warranted, I think, in considering Hospital Gangrene, more especially that form of it named Contagious Gangrene, to be a peculiar inflammatory action attacking wounded surfaces; varying in its character according to the constitution of the patient, type of the accompanying fever, and other circumstances; nearly allied to erysipelas, if, indeed, it be not a modification of that disease, and depending on a diversity of causes, as I shall endeavour to make apparent.

The causes which induce this affection have never been very satisfactorily explained, nor do practitioners seem to be yet agreed upon the subject. The foul air of crowded Hospitals has always been considered a chief cause of Hospital Gangrene, and that it is so, cannot reasonably be doubted. I am aware, however, that even this has been called in question by some writers ; but the general testimony of authors on this point is, I conceive, too strong to be controverted, and, indeed, the records of Public Hospitals bear ample proof of the truth of the opinion. But, again, we are told that there is no Hospital, however small, airy, or well regulated, where this disease may not at times prevail ;\* and that it has been known to appear among wounded who had not been in Hospital at all.†

Thus it appears that Hospital Gangrene may exist, independently of this as a cause ; that it is

---

\* J. Bell's Principles of Surgery, vol. i., p. 108.

† Rollo on Diabetes, vol. ii., p. 262.

not exclusively confined to Hospitals, as has been supposed ; and that the vitiated air of such establishments, though considered by some to be the sole cause of the disease, is but one of the many by which it may be produced.

Monsieur Delpech is of opinion that the infection of typhus fever, the exhalations from the dejections of dysenteric patients, and even from common gangrene, more especially that named Gangræna Senilis, by their immediate action on the surface of the wounds, rather than by their hurtful influence on the general system, are the most frequent sources of this affection. Indeed, from the observations of this distinguished Professor, one would suppose that almost all the cases of Hospital Gangrene which he saw during so many years of the late war, owed their origin to one or other of these causes.

I am myself inclined to believe, that, under particular circumstances, all those which have been

mentioned may at times produce this disease ; though one might be led to suspect that in Hospitals said to be crowded and ill-aired, and where nuisances are allowed to collect, or are not speedily removed, other and less equivocal causes of Hospital Gangrene may at the same time be found to exist. What these are I shall now proceed to consider.

#### I. PARTICULAR STATES OF THE ATMOSPHERE.

It has been often observed, that, in certain seasons, wounds, whether received in battle, or in consequence of operations, and even old sores, become affected with gangrene, but what these states are, has not been very well ascertained.

Hospital Gangrene has been known to prevail at all seasons of the year, but, as far as my observation goes, in hot weather much more frequently and severely than in cold.



It is well known that in hot climates, in addition to the general excitement of the system, all the secretions and excretions are more acrid, and, in a very particular manner, the secretion from sores, which is both very abundant and extremely irritating. During the prevalence of the Gangrene at Bilboa, and when it was at its very height of malignancy, of which so interesting an account is given by Dr Hennen, in his Principles of Military Surgery, p. 210, *et seq.*, the thermometer in the shade seldom stood below 75° of Fahrenheit, and often much higher. In the wards of the Hospital I have seen it at 85°, and in the sun upwards of 120°. Indeed, I know of no exception to this fact of Hospital Gangrene prevailing most in hot weather, for I have constantly found, that, in the warm months, the disease raged in its greatest virulence. I am, therefore, inclined to consider a greatly-heated atmosphere to be one of the most powerfully exciting causes of this disease.



## II. INATTENTION TO CLEANLINESS.

When the discharge of a sore, particularly in warm weather, is long confined, the dressings not frequently renewed, and the wound not cleaned by careful ablution, such changes take place in the matter discharged, as to alter its nature altogether; it becomes exceedingly acrid, and even poisonous, and cannot fail to produce the worst possible effect upon the sore.

This appears to me to be a very frequent cause of Hospital Gangrene, that form of it, in particular, termed *Phagedæna*, and, if I am not mistaken, was the source of the disease in some instances, as it occurred at Passages in Spain, so well described by Mr Blackadder.

In shewing that the disease could not be occasioned by the foul air of an Hospital, but without attempting any explanation of the fact, that gentle-

man relates a case, which I shall take the liberty of transcribing.

“ Three men, who had been severely wounded and taken prisoners, were carried to an open building, which had apparently been used as a stable, but which had not been recently occupied. After having been repeatedly pillaged, they were ultimately abandoned, and the only articles left with them were a few pieces of biscuit, a canteen of water, one sheet, one pair of trousers, a pair of old shoes, and an old great-coat. In this miserable situation they remained for three days, when they were fortunately discovered, and some provisions and clothing being provided for them, they were put into an open boat under the charge of two fishermen. Had the wind proved favourable, a few hours' sailing would have brought them to an Hospital, but it was the winter season, and they were overtaken by a storm of wind, rain, and sleet, to which they were exposed for nearly two days and a night, and when they at last got to an Hospital,

the wound of one of these unfortunate men was discovered to be affected with this disease.”\*

Now, the explanation of this case appears to me to be very easy. In all probability the wounds of these men had been entirely neglected, and the only surprising thing is, that they were not all affected with gangrene; but had it been the summer season, and had they been exposed to the other causes about to be mentioned, we should have had a very different account of them. The chances are, that before they had reached Passages, the gangrene must have made such progress that they should all have been in an advanced stage of the disease, and, perhaps, irrecoverably gone; but the cold to which they had been exposed, and the very spare diet on which, from necessity, they had been obliged to subsist, had, in my opinion, contributed to their safety. And, in that form of the disease, also, which prevailed in the Artillery Hospital at

---

\* Blackadder on *Phagedæna gangrænosa*, p. 45.

Woolwich, described by Dr Rollo, nothing appears to me more clear, than that want of cleanliness was the chief, indeed apparently the sole, cause of the disease there. Dr Rollo confesses that the wounds were seldom washed, and that the matter was allowed to form encrustations around the edges of the sores; and this, the Doctor says, arose from the opinion of some, that the washing of sores, if it did no harm, was at least superfluous. He suspected also that the poison was propagated from one sore to another, by means of the sponge employed in the occasional washing or wiping, the same sponge having been unguardedly used for different sores.\*

### III. ACRID OR IRRITATING APPLICATIONS.

These may be considered another cause, or at least may contribute very effectually to the production of this disease.

---

\* Vol. ii., p. 266.

This is one great objection to the use of ointments; for, when long kept, they invariably become rancid, and irritate extremely. After a continued use of such ointments, or even after a single application of this kind, I have not unfrequently seen the character of a sore entirely changed, and, from a healthy ulcer, secreting good pus, to become irritable, inflamed, and very painful, the granulations to disappear, the surface to become glassy, and discharge a thin acrid sanies, very fetid, and to be brought to a state, if not actually of gangrene, at least somewhat approaching to it. On this subject the suggestions of Sir Everard Home are well worthy of attention.\*

#### IV. STIMULATING FOOD.

It has been thought that the disease may be occasioned by a change of food, as from a vegetable

---

\* *Vide* Home on Ulcers, p. 39.

diet to one consisting chiefly of animal matter ; and I have myself very little doubt that it may contribute to that effect.

The diet of soldiers, on service particularly, is very stimulating, consisting in a great measure of animal food, with a daily allowance of wine or spirits ; and I have on many occasions seen, for days together, the diet made up altogether of animal, without any admixture of vegetable matter. This, to be sure, is not their ordinary fare ; but it cannot fail, in my opinion, to induce a state of the system highly favourable to the production of this disease ;—to men in health it may be considered a predisposing cause, and to the wounded, a powerfully-exciting cause of Hospital Gangrene.

The diet of seamen in the navy was formerly pretty much the same as that of soldiers on service, or, perhaps, even more stimulating, for the allowance of wine and spirits made to them was greater ; and we know how liable they have always

been to this affection ; but, in consequence of most judicious regulations made by the Admiralty Board, seamen's diet has, for a number of years past, been considerably altered ; consisting now of a much greater proportion of vegetable matter, and the ration of spirits is much reduced ; which cannot fail, I should imagine, in every point of view, to be attended with the greatest benefit to the service. Dr Trotter appears to me to have most correct notions on this point.\*

The importance of the subject of dieting troops, more especially in tropical climates, has been most particularly attended to, and pointed out, by that excellent officer General Stewart, who, during a long period of varied services, seems to have overlooked nothing that could tend, in any way, to the comfort or benefit of the soldier, or to the advantage of the State, in a work which, while it reflects the highest credit on the author as a com-

---

\* *Vide Medicina Nautica*, vols. ii. and iii.

mander and an historian, has, at the same time, in an eminent degree, exalted the character of his countrymen.\*

#### V. INTEMPERANCE IN THE USE OF WINE AND SPIRITOUS LIQUORS.

It is hardly possible to imagine any thing more likely to produce Hospital Gangrene than the abuse of wine and spiritous liquors; and I have been long inclined to consider this as one of the most powerfully-exciting causes of the disease. In that very violent form of the Gangrene which prevailed at Bilboa in the summer and autumn of 1813, whatever other causes might have contributed to the production or continuance of the disease, there is not a doubt in my mind, that it was rendered much more virulent, and that it was even perpetuated in the Hospitals there, by the use of

---

\* *Vide* Stewart's Sketches of the Character of the Highlanders, &c., vol. i., p. 357, and vol. ii.



wine and other stimulants, injudiciously administered. From an idea which very generally prevailed, that the accompanying fever was Typhus, and that the Gangrene could not be prevented, or successfully treated, unless by stimulants, antiseptics, and tonics, a liberal allowance of wine was made to every patient as a preventive; and, when the disease actually appeared, it was then prescribed in increased quantity as a cure; the consequence of which was a fatal termination in almost every case. On this point I am very sorry to be obliged to differ so widely in opinion from my friend Dr Hennen.

It will be seen from the account which he has given of the Gangrene at Bilboa,—that, from the view which he took of the disease, and in order to reconcile the mode of treatment which was first established with that which was ultimately adopted, he considered the fever, in the first instance, and during the hot weather, to be of a typhoid character, and that its type altered, or became inflam-

matory, when the cool weather set in. Now, this is not what might *à priori* be expected, and is very different from the opinion one would naturally entertain on the subject. The fever appeared to me, from the first, to be highly inflammatory, that is immediately after the injury was received, and at a time when the heat of the season was at its maximum ; and that it became more mild when the temperature fell, or when the sedative effect of the cold began to be felt ; but it was not until the antiphlogistic treatment was fully established, that any remarkable decrease in the mortality took place. The tabular views annexed, will shew at once the difference from the opposite modes of treatment which were pursued.

Dr Trotter, who appears to be perfectly well aware of the causes of this disease, as it occurred in the navy, has some very judicious remarks on this subject, under the head of Malignant Ulcer. He observes, “ When a disease like the one in question, which has usually appeared in a warm coun-

try only, comes to shew itself in a cold climate, it is reasonable to conclude that there must be some similarity in the causes which produce it in both situations." And after giving a detailed, but by no means an exaggerated statement of the excesses which seamen commit, whenever an opportunity offers, he adds, "If the body suffers a diminution in its excitement, between the West Indies and Plymouth Dock, with all deference to the licensing magistrates, the landlord has in his possession what can quickly stimulate beyond solar influence."\* And Mr John Bell, in his Remarks on Hospital Gangrene, after adverting to the irregularities which he witnessed during the period of his visit to Yarmouth Hospital, confirms Dr Trotter's statement, by giving, no doubt, a rather ludicrous, though I dare say a faithful, account of what he saw; and certainly quite in accordance with the habits of British seamen.†

---

\* *Medicina Nautica*, vol. iii., p. 469.

† According to Mr Bell, "When they wanted to steal out, and

To illustrate this still farther, and to shew how soon this affection may be brought on by an improper regimen, I shall relate a very remarkable case which occurred to myself at Brussels. A few days after the battle of Waterloo, the weather being then very hot, I was requested by the surgeon of a foreign corps, to visit Major ———, an officer of the King's German Legion, who, on that memorable occasion, received a severe wound on the leg. The object of my being called in was to decide on the question of amputation, and to give assistance, in case the operation was determined upon. On entering the apartment, at an early hour in the forenoon, I was startled at the scene which presented

---

get drunk, they had two general methods, the wet and the dry; the wet, when they went through the ditch, and the dry, when they burrowed through the sand, and so got under the pallisade. In the Yarmouth Hospital sentries were placed, one to guard the holes, and another to guard the ditch; however, he had the most difficult duty who watched the ditch, for nothing of them but their heads were above the mud, and unless he heard them puddling and snuffling, he had no chance of preventing the enterprise."—*Vide* Note to p. 116.

itself, and predicted at once what would be the consequence. The patient was apparently about fifty years of age, of a very plethoric habit, and, without doubt, a *bon vivant*. He was propped up in an arm-chair, wrapped in sheets; his leg, supported by pillows, extended on a stool; and on a table, which stood close at hand, were wine, spirits, and tobacco, in which he had been freely indulging. On examination, I found that the gastrocnemii muscles of one leg had been carried away by the splinter of a shell; the whole limb was in the highest state of inflammation; the system was violently excited; the wound had already become gangrenous, with the peculiar smell which is characteristic of contagious gangrene; and the pain was quite insupportable. I gave it as my opinion that no operation should be thought of, in the state of the wound at that time. I advised that the patient should be largely bled, and some cooling aperient medicine administered; that cold lotions be applied to the wound, and to the whole limb; stimulants of all kinds to be prohibited, and the most

strict antiphlogistic regimen to be put in force, and continued until the fever and inflammation should abate. On my objecting to the use of such powerful stimulants as I saw before me, the effects of which were but too evident from the state of the wound, the Major gave me to understand, that, with respect to regimen, he would be his own physician, and that my opinion was only requested as far as regarded the operation. My remonstrances I saw were useless, nor was the advice which I gave more approved of by the surgeon, who appeared to be a most determined Brownonian. I accordingly took my leave, with a promise, however, to return, whenever my services should again be required. I heard no more of this patient until some days after, when I met the Surgeon who had been in attendance, and who told me that the Major was dead,—that he insisted upon the operation being performed, which was accordingly done; and that the same stimulating regimen had been continued to the last. He died from the violence of the fever, surviving the operation little more than twenty-four hours.

## VI. MOTION, OR MECHANICAL IRRITATION.

This is a much more frequent cause of Hospital Gangrene than has been imagined ; for if we admit that, under particular circumstances, any great irritation may induce the disease, then we cannot doubt that motion must be one of the chief exciting causes of this affection.

Recollecting what I have myself seen in the Peninsula, which was for so many years the theatre of the greatest military operations, I am convinced that, in transporting the wounded from the field, or from one Hospital station to another, when at any considerable distance, more cases of Hospital Gangrene appeared upon the road, than in any other situation. In support of this opinion, I shall mention only one or two of the more remarkable instances which came under my own observation.

In the beginning of August 1809, a few days



after the severe battle of Talavera, when so many of our wounded fell into the hands of the enemy, the slighter cases only effected their escape, some on foot, others on mules or cars. Few or none of these men had been in hospital after the battle, but had been lodged in convents and private houses, and although the wounds of all were in a most promising state when they began their flight, they had not been many days on the road before evident signs of the disease became manifest. Many, I have no doubt, must have died on the journey, and when the survivors reached Elvas, which was the nearest station on the frontiers of Portugal, distant about forty leagues,—the disease continued, and raged with unexampled violence. These cases I saw at Talavera, and some days after on the road, when the gangrene had appeared. In the autumn of 1813, when I was stationed at Bilboa, a party of wounded arrived from Vittoria, distant only twelve leagues, whose wounds were in a healthy state when they commenced their route, and in whom the gangrene appeared for the first time in the



journey thither. Some of them were among the worst examples, that is to say the most severe, of the disease I ever saw; and the same fact is related by Dr Hennen in his Principles of Military Surgery, p. 214.

#### VII. SPECIFIC CONTAGION.

When the disease is once produced, although the same causes continuing to operate may be sufficient to keep it alive, it appears probable that a contagion is generated, and that the disease may be propagated, in this way, to a certain extent at least, even although the causes, by which it was originally produced, should have ceased to act. But I confess, that I impute much less to this than to the continued operation of the original or other irritating causes. At Bilboa we had a strong instance in proof of this opinion. Although all the means which are usually employed for the extinction of contagion were had recourse to, such as fumigations of

nitric and muriatic acid gases, ventilation, separation, &c., nothing appeared to have the least effect in moderating the violence of the disease, till the antiphlogistic regimen was established.

However, that the disease is contagious or infectious, I think cannot be doubted. This is admitted by most of those who have written on the subject ; but how to account for its origin has always been considered a complete mystery. Under what circumstances contagion is generated we shall, perhaps, never be able satisfactorily to explain ; or how a disease which, in general, has no such property, should occasionally become contagious, instances of which may be seen in erysipelas, or in ophthalmia ; but it is sufficient for our purpose to be aware of the fact. This property, however, of generating contagion in its progress, is not peculiar to Hospital Gangrene alone ; and it seems to me, that, among certain diseases, which have been thought to owe their origin to a morbid poison, as, for instance, the Egyptian Ophthalmia, there is, in some

respects, a very considerable analogy to that now under consideration.

This disease, like Hospital Gangrene, has always appeared to me to originate in certain irritating causes, the influence of which is much favoured by the climate. Like it, Egyptian Ophthalmia is found to prevail with greatest virulence in the same seasons, that is, during very hot weather ; when once produced, it acquires, in like manner, the property of extending itself by contagion, or by infection ; and, lastly, it is found to yield to the same kind of treatment,—the antiphlogistic.\*

We know that irritating causes, which, acting in a slighter degree, produce only inflammation, increased secretion, and ulceration, will, when carried to excess, occasion sloughing ; and this will be

---

\* May not the same analogy be extended to Syphilis ? The recent doctrines which have been advanced, seem, in some measure, to confirm this ; and may, perhaps, help to account for the origin of that disease.

found to be the case in specific as well as in simple sores; and we find that all those already enumerated, to which, perhaps, may be added the stimulating influence of mercury, are the most frequent sources of phagedæna in syphilitic sores. Heat, within certain limits, appears to be a most powerful agent, both as a direct stimulus, and as favouring the production of contagion; hence the great virulence of some diseases in warm, and their comparative mildness in cold, or in temperate, climates.

Now, if it can be made out, that any of the causes, singly, which have been mentioned, may produce Hospital Gangrene, what must we expect, when all, or the greater part, of these causes are in operation at once? and this is not an imaginary case, but one which, I conceive, occurs very frequently. We have only to observe the movement of a party of wounded on their route, to be convinced of this.

After reading the valuable work of Delpech on

this subject, one cannot but be surprised that the effects of local or mechanical irritation should have been entirely overlooked by him ; and particularly when he acknowledges that the wounded had been obliged to travel great distances, and that some of them were between two and three months on the road before they reached the hospital at Montpellier, exposed, as they no doubt must have been, to every cause which could have any effect in bringing on the disease ; but contagion, dejection of spirits, want of proper food, and other debilitating causes, seem to be all that the distinguished Professor has taken into account as having any effect in the production of it.

In speaking of the causes of gangrenous phagedæna, Mr Blackadder says, “ he has understood, though he cannot certify to its correctness, that the disease has occurred during the conveyance of the wounded from one hospital station to another, the weather being very hot, and the distance considerable,” (p. 46.) And my late friend, Dr Hilson,

who had many opportunities of witnessing this affection, speaks pretty distinctly upon this particular, in a thesis published here in 1818. Being employed on a duty of that kind, he says, a disease like Hospital Gangrene appeared among the wounded of whom he had the charge.

If the view now given of the causes of Hospital Gangrene should be found to be correct, it will explain some points in the history of this affection, which have hitherto been considered mysterious; and it will shew that the usual means which have been employed for the prevention of this disease, however proper they may be in hospitals for the general health of the patients, such as ventilation, separation, fumigation, or even the entire breaking up of an establishment where Hospital Gangrene prevails, as has been proposed, will be of little avail, so long as the true causes of the disease are overlooked.

For the prevention of Hospital Gangrene in a

recent wound, it appears to me that the great object to be held in view, is to avoid all sources of irritation, and by all the means in our power to keep down inflammation. From the moment of receiving the injury, a moderately antiphlogistic regimen should be prescribed; the wound should be kept cool; and the discharges from it removed by careful ablution: no bandages ought to be applied in the first instance to gunshot wounds. With regard to these, the directions of my friend Dr Luscombe are particularly deserving of attention;\* above all, absolute rest, together with the above remedies, should be enjoined.

The sedative effect of cold in repressing inflammation and Hospital Gangrene cannot, I think, be better illustrated than in the following extract, which I shall take the liberty of making from the work just now quoted, as it corresponds with what I have said on the subject.

---

\* *Vide* Luscombe on the Health of Soldiers, p. 132.



Speaking of amputation, the Doctor says, “ I have been for a long time persuaded that stumps do much better when dressed more lightly than has been the usual custom, by which the parts are kept in a state of increased temperature by numerous bandages, caps, &c. ; and I have of late formed a decided opinion in favour of the direct application of cold to stumps, and other wounds occasioned by surgical operations.

“ I was first led to entertain this opinion by a valuable communication I had with the Surgeon-General of Ireland, who acquainted me, in conversation, that he had ascertained from surgeons who were present at the battle of Eylau, that the wounded were exposed after that action to intense cold, so much so, that many of them were frozen to the ground by their blood ; but that it was remarked, that Hospital Gangrene, which was at that time very prevalent, attacked none of those who had been thus exposed to the cold ; but that, on the



contrary, all their wounds did extremely well.”—

Page 140.

In all wounds, but particularly those of the trunk and lower extremities, rest is of the utmost consequence. Nothing excites inflammation sooner than motion. I shall never forget the appalling spectacles I beheld in the unfortunate men who effected their escape from Talavera; though the wounds of many of them were but slight, and, no doubt, would have soon got well had they remained at rest, and on the antiphlogistic regimen; yet, after a few days, in consequence of the motion, and other irritating causes to which they were subjected, they were to be seen in all stages of the disease, from the state of incipient inflammation to that of gangrene, and even sphacelus, and loathsome from the quantity of maggots with which they were infested; and, in those men who arrived at Bilboa from Vittoria, many of them were in an equally bad state; whole limbs were to be seen, almost entirely deprived of vitality, nearly drop-

ping off, and a prey also to vermin, which seemed actually to be devouring them.

As a contrast to this, and to shew the effect of rest, when followed up by the antiphlogistic regimen and other sanative measures, I may mention that, after the battle of Waterloo, a very great proportion of the wounded were sent to the hospitals in Brussels, which, being in the immediate vicinity of the field, they reached without much difficulty or exertion. The consequence was, that, among the many hundreds who were treated there, scarcely any cases of this disease appeared. The very few that existed, and which I had an opportunity of seeing, were in men who had been concealed by the Belgians, entertained in their houses, and, from an excess of hospitality on their part, had been treated by them most sumptuously. These cases were highly inflammatory, and yielded to venesection, and the antiphlogistic regimen.

The disease was said to be more frequent at Ant-

werp ; and this is just what might have been expected, the distance from the field of Waterloo being so much greater.

The practical deduction from all this, I conceive, ought to be, that hospitals should be established as near the scene of action as circumstances will permit ; and that wounded men should never be moved, without some very urgent reason.

Having proceeded thus far, I may now advert to a question, which at first sight appears very simple, which has been long agitated, but does not seem to be yet settled—Whether the local or constitutional symptoms of Hospital Gangrene occur first in the order of succession ? From the account which has just been given, it will be seen, that the local symptoms were always the first ; but to decide the question, I suspect me must look to the causes.

If the disease originate in foul air, or febrile infection, which seems to be the case most frequently

in civil hospitals, it is very possible that the constitutional symptoms may often precede the local, or appear at the same time ; but in army practice, where other causes are more frequent, as local or mechanical irritation, intemperance, and such like, it is reasonable to expect that the local must precede the general affection ; and this, I think, must be admitted.

It is by such an explanation only, I conceive, that the discordant opinions of authors on this point can be reconciled.

According to Dr Walker, "the disease may be perfectly local for a time, as in cases where it arises from the matter of a sore in a state of gangrene being applied to a healthy sore, or introduced into a punctured wound of a perfectly sound part, of which latter we have had several instances at this station ; produced in this way, it may remain for some time longer or shorter perfectly local, but the constitution will at last become affected. Most

commonly, however, the constitutional affection precedes the local, perhaps always, except in the cases above mentioned ; and it is most probable, that when the contrary has been supposed to be the case, that the symptoms of the constitutional derangement, from being slight, have been overlooked."

This also appears to be the view which Dr Hennen has taken.

The prognosis in this disease, as in most others, must depend on circumstances.

If the patient be young and healthy, of temperate habits, and the accompanying fever inflammatory, even although the affection should be pretty severe, the prognosis, I think, may be favourable ; but, on the contrary, if he be old, addicted to intemperance, his health bad, and particularly if the gangrene should be complicated with fractures of the bones, or a scorbutic diathesis be present, with

a fever evidently typhoid, it must be very unfavourable.

In laying down rules for the treatment of this complaint, we must be guided entirely by the symptoms. If the constitution be much affected, general remedies will be required ; if, on the contrary, the affection appear to be entirely local, the cure may be trusted to topical applications ; but, in many cases, both the one and the other will be found to be necessary. It is of the utmost consequence, also, to attend to the type of the accompanying fever, and to ascertain whether the gangrene be simple, or complicated with any other disease, such as scurvy or bilious fever, in which case its character will be modified, and the corresponding treatment must also be different.

I mean to confine myself chiefly to the simple form of the disease, and to such as I have most commonly met with myself.

The treatment, then, may be divided into general and local.

When Hospital Gangrene occurs in a recent wound, and in young healthy men, or in men of the middle period of life, who are most frequently the subjects of it, the accompanying fever is almost always inflammatory. I have seen but few exceptions to this. Indeed it is not easy to conceive how so many should have adopted the contrary opinion.

Professor Delpech, in his preface, endeavours to shew, that the French soldiers, from their great sufferings, and constant defeats, became dejected, and that the fever in them was always of the low kind. This accords with his theory of the disease. The French, however, are not remarkable for dejection of spirits, and have always appeared to me to bear up under adversity with wonderful fortitude. At the same time it must be admitted (probably owing



to their more temperate manner of living), that they are less liable to violent inflammatory diseases than the natives of this country, at least as far as accords with my own observation.

But whatever might have been the case in the French army, it was very different in the British. Constantly elated with success, they had gone on, under their illustrious commander, for a series of years, from one great action to another, victorious on every occasion, till at last they terminated their very extraordinary career by, perhaps, the most brilliant achievement of modern times. They may be said to have been in a constant state both of bodily and mental excitement. In such cases, the fever is almost always inflammatory, and will require blood-letting; but it must be proportioned to the degree or violence of the inflammation, and the age and strength of the patient.

No precise rule can be laid down regarding the quantity to be taken; but in severe cases I have



had occasion to take one, two, three, or even four pounds of blood before the inflammatory symptoms were subdued. In men, however, of a less robust constitution, who may have lingered long in hospital, or suffered much from ill health, we must act with the greatest caution. Blood-letting in such, is either altogether inadmissible, or should be used very sparingly. The same may be said of those who are the subjects of Hospital Gangrene in civil hospitals. They are, for the most part, poor people, worn out with age, or whose constitutions have been broken by poverty and hard labour; in such the disease assumes a different character, and will require a corresponding treatment. As an auxiliary to general blood-letting, Dr Trotter has proposed the local detraction, by cupping and scarifying; and though I have not employed this myself, I can see no real objection to its use. The danger of the punctures becoming gangrenous, appears to me not to be very great. The same objection has been made to general blood-letting; but though I have bled many in this disease, I never saw a

single instance of gangrene supervening on the operation.

Dr Thomson, in his Lectures on Inflammation, p. 494, remarks, that the effects of spontaneous hæmorrhages in this disease, have either not been accurately observed, or at least not fully recorded, and he conceives that they might be a guide of great importance in practice. To this I beg leave to say, that, as far as my observation goes, in the early or inflammatory stage of Hospital Gangrene, spontaneous hæmorrhage seldom occurs, and it might then, if not too profuse, be very beneficial. But in the later or more advanced stages of the disease, I have always considered it a very alarming, dangerous, and, most frequently, a fatal symptom, denoting that great destruction had already been done, and that the gangrene was still making progress. Many of our patients at Bilboa were carried off in that way. My sentiments respecting this are very different from those of Dr Hennen. He says, "But what more than all convinced us of

a change of type, and pressed on our consideration the propriety of blood-letting, was, that spontaneous hæmorrhages, which formerly sunk the patient's strength, were now attended with obvious relief.”  
—*Military Surgery*, p. 223.

Those who trust chiefly to local remedies in this disease, and who disregard the constitutional symptoms, as being of secondary importance, and those also who consider the accompanying fever to be always of a typhoid type, object strongly to the use of the lancet, and say that they have sometimes found it do incredible mischief. To this I answer, that if blood-letting be used indiscriminately in this disease, there can be no doubt that it will often disappoint the practitioner, and even be productive of mischief. This I can myself bear witness to ; for at Bilboa, after blood-letting had been acknowledged to be of the greatest benefit in those cases to which it was really applicable, I had sometimes the mortification to see that remedy brought into discredit, by being used in cases where it was evi-

dent, beforehand, that it must have been injurious; and this will always be the case, where due regard is not paid to the circumstances under which any particular remedy is prescribed.

It has already been said, that, in that form of gangrene named Phagedæna, a very great destruction of parts may sometimes take place, without the constitution being much affected by it. Now, if blood-letting be used in such a case, or even in the advanced stage of the true inflammatory gangrene, when disorganisation has taken place, and the system is sinking under the consequent debility, the vital powers being nearly exhausted, the result must be obvious; but when it is used with caution, and in cases where it is really applicable, it will be found to be a most valuable remedy.

It affords me the greatest pleasure to find that my views of the disease, and the treatment which I adopted, have been confirmed by the subsequent experience of Dr Wardrop of London, author of

many excellent professional works, and whose opinions I highly value.\*

Emetics have been highly extolled by many in this disease, as Pouteau and others. I have certainly often seen them used, and sometimes, as I think, with advantage ; but as a general remedy, I consider them much inferior to cathartics. The cases to which they are chiefly applicable, are those where the stomach is loaded, and where the fever appears to be of a bilious character. This was the case in not a few which I saw at Bilboa ; the gangrene being complicated with a fever of that kind, and sometimes supervening on it. Emetics, in nauseating doses, were often tried in such instances, and were considered useful, both by their operation as evacuants, and by the nausea which they excited lowering the action of the vascular system. In the same cases, antimonials and saline diapho-

---

\* *Vide* Discourses on Blood-letting, pp. 141, 142, 143. Published in 1835.

retics will be found very useful. But whatever may have been the opinion with regard to emetics, by the consent of all, cathartics are considered quite indispensable.

Cathartics appear to be the remedies, next to blood-letting, the best calculated for lessening arterial action in inflammatory diseases, and the use of them was indicated in cases where that remedy was inadmissible, or at least not so much required. These cases were of a doubtful nature, where general inflammatory action existed to a certain degree, but where, from the long confinement of the patient, or his previous state of ill health, venesection could not with safety be employed, or where the fever was evidently typhoid. Among the poor in civil hospitals, purgative medicines will be found, in this disease, I suspect, unless in very extraordinary cases, to be the most useful, indeed the safest evacuants.

Bark, which was formerly so celebrated as a spe-

cific in the cure of gangrene, is, in this disease, in the commencement, entirely useless. Indeed it is not surprising that this should be the case. Bark is acknowledged to be a powerful tonic; and if I am right in considering Hospital Gangrene to be an acute inflammatory affection, then it is just what might be expected, that, if not injurious, it must be ineffectual. But in the more advanced stages, when the inflammation has abated, it may be given as a useful remedy, either alone, or in conjunction with the mineral acids.

The vegetable and mineral acids are not liable to the same objections as bark and wine, and may, therefore, be used with safety in both forms of the disease.

The sulphuric is most usually employed, but the nitric, muriatic, citric, acetic, and tartaric, may be given with advantage, and their efficacy is generally the greater when the dose is considerable. Largely diluted with water, the sulphuric acid



forms a most grateful, refrigerative beverage, and may be used freely.

The cold affusion has been thought to be deserving of attention in this disease ; but it does not seem to have been ever put to the test. If we were sure of obtaining the sedative effects of the remedy only, I should be inclined to think very favourably of it ; but generally, after the cold affusion, a reaction of the system takes place, which I should be afraid might rather aggravate a local inflammation, or render the propriety of employing it a matter of doubt ; but as I have never tried that remedy in Hospital Gangrene, I offer this only as conjecture.

To sponging of the surface of the body with tepid water, there can be no such objection, and from its cooling and soothing effects, I should be inclined to expect the most agreeable results.

The violent pain which always exists in the com-



mencement of this disease, seems to call for the use of opium ; but as long as the fever and inflammation continue, it will tend only, both by its direct stimulating properties, and by deranging the functions of the stomach and chylopoietic viscera, to aggravate the symptoms. In the more advanced stages, however, when the inflammatory symptoms have subsided, should the patient complain of restlessness, it may be allowed, and then I have no doubt that it will be found beneficial.

Camphor in large doses has been recommended by Pouteau in this disease. It certainly has very considerable anodyne effects, and, perhaps, may be used where opium would be improper ; but I have no idea of its possessing any specific powers in Hospital Gangrene, and it appears to me, to be applicable chiefly in the low state of the disease, which sometimes succeeds to great vascular action, or where the fever is evidently typhoid. In such cases I have occasionally used it, and, I think, with good effect.

The use of wine, as is observed by Dr Thomson, in the early stage of Hospital Gangrene, is liable to still stronger objections than opium, for it adds to the violence of the fever, without having, like opium, a tendency to soothe or diminish the local pain.\* At Bilboa I saw much mischief done by an injudicious use of wine; every symptom was aggravated by it, and the gangrene assumed a character of malignancy unexampled, I verily believe, in the history of this affection, and which, under other circumstances, it never could have acquired. Had the same treatment been persisted in, it is impossible to say what might have been the result, or to what extent the mortality might have reached. It is my firm belief, that, of the numerous inmates of a great hospital, the Cordileria, in which were usually from 600 to 800 men or more, besides those in the other hospitals at the same station, where the gangrene prevailed, comparatively speaking, very few could have escaped with their lives, or without

---

\* Lectures on Inflammation, p. 495.

losing their limbs. Fortunately, however, the antiphlogistic regimen was at last established, and in a short time afterwards the gangrene ceased to be formidable.

But although the use of wine and other stimulants, in the early stage of Hospital Gangrene, while there is great vascular action, as well as much local inflammation, cannot be too highly reprobated, yet there are states of this disease in which it will be found not only not injurious, but very beneficial; such, for example, as in the advanced stages of Hospital Gangrene, or in that which may occur in poor, old, infirm people, or where the patients have lingered long in hospitals, and their health has been broken by previous disease, or where the fever is evidently from the first of a typhoid character.

The diet, in the first instance, should be very light, consisting chiefly of farinaceous matter; indeed I ought rather to say, that an almost total abstinence should be enjoined; but when the fe-

brile symptoms abate, it may be made more nourishing. The drinks should be of the weakest kind, such as tea, water-gruel, and lemonade. Ripe fruits, such as oranges, may be freely used; and from the first, the regimen altogether ought to be strictly antiphlogistic.

#### LOCAL TREATMENT.

There are few diseases in which a greater variety of topical applications has been applied, and to enumerate them all would be useless. Those, however, of any efficacy may be comprised under three classes, viz., Sedatives, Escharotics, and Stimulants.

When the inflammation continues violent, cold applications, such as pure water alone, or mixed with a small portion of acetic acid, are what I should prefer. Whatever objections there might be to the cold affusion as a general remedy, nothing appears better calculated to subdue inflammation

in the local affection, and, consequently, to allay pain, than the continued application of cold ; besides, in very warm weather, it is much more agreeable to the feelings of the patient than any thing hot. To obtain all the advantage from the sedative effect of cold, cloths dipped in the liquid should be applied to the part, and kept constantly moist. I have already mentioned an instance of the good effect of cold in the prevention of Hospital Gangrene, and I have no doubt that if applied steadily in cases to which it is adapted, it will be found a most valuable remedy.

Poultices of all kinds, the common emollient, as also the fermenting, carrot, turnip, and charcoal, being always applied warm, have appeared to me, in general, to aggravate the pain ; nor can we be surprised at it, when we consider what a powerful stimulant caloric is. Poultices, though applied cold, soon acquire the temperature of the body ; they are, therefore, not the best applications in this com-

plaint, and are objectionable also on account of their weight.

When the inflammation abates, the sloughs separate, healthy pus is secreted, and florid granulations spring up; when this is the case, the wound should be dressed simply with dry lint, over which a pledget of emollient ointment ought to be applied, or what is better, lint moistened with a weak solution of sulphate of zinc, and covered with oiled silk, to prevent evaporation, and the whole supported by a good compress and roller. Should the sloughs continue to adhere after the inflammation has abated, some stimulating application, such as a mixture of resinous ointment, and oil of turpentine, known by the name of warm dressing, may be made to the wound, or an ointment composed of unguent. resinosum and oxyd. hydrarg. rubrum, in the proportion of  $\text{ʒi}$  of the latter to  $\text{ʒi}$  of the former. On such occasions I have also found the diluted nitric or muriatic acids, or the citric and acetic acids, good applications: in the same cases

a solution of *argentum nitratum* will be found very useful. It is in this stage of the inflammatory gangrene, that warm fomentations and poultices may occasionally be employed with advantage, and that the stronger escharotics, such as the concentrated mineral acids, caustic alkalies, arsenical solution, or the actual cautery, may be used most successfully; but it is not improbable, that escharotics, applied at a very early period, when the morbid action is just commencing, may sometimes, particularly in old wounds, arrest at once the progress of the disease. A more generous diet may now be allowed, and even a small quantity of wine. But although the patient has arrived at the stage of convalescence, and may be considered as safe, I can affirm, from extensive experience on this point, that if he be guilty of any excess, more especially in drinking, of using exercise, of not attending to the proper dressing of the wound, or neglecting the state of the digestive organs, he is almost certain of suffering a relapse, when the same train of symptoms will be renewed, and the danger of the patient



will be infinitely greater, and exactly in proportion to the state of debility to which he is reduced.

Those who are entrusted with the charge of patients in this state, cannot be too attentive to the proper dressing of their wounds. The new granulations continue long very weak, and extremely liable to fall into disease; and the danger of this will be in proportion to the extent of the renewed surface. Nothing favours this diseased action more than inattention to the cleanliness of the wound, and the want of due support from proper bandaging. When the discharge is long confined, it becomes acrid, and even poisonous, and from this cause, more than any other, I conceive that that form of the disease named Phagedæna most frequently arises. If the discharge continues very abundant, the dressings should be frequently renewed, and some astringent lotion, such as a weak solution of *acetas plumbi* or *sulphas zinci* used at each dressing; after which powder of Peruvian bark may be applied to the wound as an absorbent.



In this case also, it may be taken internally, with very good effect. Should phagedæna supervene, which may be known by the appearance of a small dark spot or ulceration, as already described, escharotics should immediately be applied.

This form of the disease, in the first instance, is purely local, and we are almost sure of putting a stop to its progress, by local remedies alone. Those which I have been chiefly in the habit of using are, *argentum nitratum* and *oxyd. hydrarg. rubr.*; but the undiluted sulphuric, nitric, and muriatic acids, and the caustic alkalies, have also been often employed with the same intention.

The oxygenated muriatic acid was made use of by Dr Rollo, in that form of the disease which prevailed in the Artillery Hospital at Woolwich, with great success; and I find that the nitric acid has been employed at St Bartholomew's Hospital in London, by Mr Wellbank, in some

cases of syphilitic phagedæna, with the best effect.\*

At Bilboa I used the oxyd. hydr. rubr. very extensively, because, after many trials, I found it was the only escharotic that could be applied without causing much pain, and that it answered the purpose as effectually as any other. A thick eschar is very soon formed, which is easily removed at the next dressing.

An incipient phagedæna may be often removed by one application of the precipitate, but if the ulceration has made much progress, or has penetrated deep into the soft parts, several applications may be necessary, as the eschar only penetrates to a certain depth. In the same cases the solution of arsenic may be employed as recommended by Mr Blackadder in Phagedæna gangrænosa, and practised by him with so much success at Passages; or

---

\* *Vide Medico-Chirurgical Transactions*, vol. xi., p. 361, *et seq.*

the actual cautery, as used by Pouteau, Delpech, Boyer, and others. Mr Blackadder is of opinion, that Hospital Gangrene, under any form, may be speedily and certainly cured by the arsenical solution.

At the time when this disease raged with so much violence at Bilboa, I had not heard of that remedy ; and when I was made acquainted with it, the malady had abated so much, and was so manageable by the means then in use, that it was not thought necessary to have recourse to any other, and since that time I have had no opportunity of putting it to the test. That it is a valuable remedy in certain states of the disease, there cannot, I think, be a doubt ; but that <sup>it</sup> will succeed in all, and without the assistance of general remedies, remains, I conceive, yet to be proved. Whether, for example, it would have been applicable to the cases at Bilboa, attended as they were with such excessive inflammation, and originating in the causes which I have endeavoured to point out ; or

whether it would answer in cases of gangrene, breaking out on a journey, as happens in the removal of wounded men from one station to another, which is always preceded by inflammation, and depending, for the most part, on a variety of irritating causes, are questions which I shall not attempt to decide.

The same may be said of the actual cautery, which has been used by the French writers so successfully ; but, indeed, after perusing the works of Pouteau, and more particularly of Delpech, who has, perhaps, had more experience in this disease than any practitioner of the present day, it may be considered presumption in any one to call it in question. I have<sup>34</sup> been informed by some who have witnessed the practice of Dupuytren, the late celebrated surgeon of the Hôtel-Dieu at Paris, that he trusted very little to general remedies in this disease ; at the same time, however, that he used the cautery, he was frequently obliged to have recourse to the lancet.

The cautery, at first sight, appears to be such a formidable remedy, though I do believe that it is more so in idea than in reality, that it is not likely soon to be brought into general use in this island. In cases, however, which have resisted other means, we ought not to scruple to employ it, and it ought, at any rate, to be kept in view as a last resource. I find, accordingly, that the prejudices which have so long existed against it are at last giving way, and that in some cases of caries, and in scirrhus tumors of the tongue and mouth, which could not be removed by the ligature, or with safety by the knife, and in some species of polypi of the antrum maxillare, it has been used by some surgeons in this country with very good effect.

There is a species of gangrene complicated with a violent remittent fever, like the yellow fever, which may be mistaken for Hospital Gangrene, but is very different. It attacks wounded men, particularly after undergoing amputation, and has proved fatal, I think, in almost every instance that

I have seen. The gangrene in this case appears to be symptomatic of the constitutional derangement. It is mentioned by Baron Larrey as having affected the French soldiers, more especially after operations, in the campaign of Egypt;\* and Dr Hennen speaks of the same disease, as it occurred near Brussels in an hospital occupied by a part of the Brunswick corps.

The hospital was situate in a swampy flat, through which the great Antwerp Canal was cut. The wounded lay on the floors, and were much crowded; and it appears from the accounts which Dr Hennen received from the surgeon who did duty there, that almost all the amputations which were performed in that hospital immediately after the battle, terminated fatally. That some hours after the operation, the patient was seized with fever, strongly resembling the yellow fever. A violent rigor was soon followed by heat and sweating,

---

\* Larrey's Military Surgery, vol. ii., p. 18, *et seq.*

coma, yellow skin, and gangrenous spots on the stump. The accession continued for an hour or two, and returned in five or six hours. Almost all those who had suffered amputation, died of it on the first or second day after the operation.\*

Several cases of this disease, somewhat different, occurred to myself, in the Jesuits Hospital, which stands in the high part of the town of Brussels. The patients were all wounded in the knee-joint, and amputation was not performed till three weeks from the time of the injury, and just when they were beginning to grow hectic. These patients all went on well for eight or ten days after the operation, the hectic symptoms were entirely removed, and the wounds in some of them were nearly healed; but at the end of that time they were seized with fever. A violent rigor was soon followed by heat and perspiration; in a few hours more, after another rigor, the wounds burst open, the bone pro-

---

\* Hennen's Military Surgery, p. 239.



truded to the extent of several inches, and the whole surface of the stump fell into mortification. The rigors continued at short intervals, and in little more than thirty-six hours from the accession of the fever they expired. Dr Walker seems to have met with cases of the same kind in the Burcenea Hospital at Bilboa. He says, "often in the course of a single night, stumps, on the point of cicatrization, were found to have opened entirely."

Having before met with such cases, I was aware of the danger, but I could do nothing to avert the fatal termination. Under such perplexing circumstances, it appeared to me most advisable, after prescribing an emetic and cathartic, to support the strength of the patients as long as possible. With this view, bark was ordered, with wine and other cordials, and the stumps were dressed with a powder composed of myrrh, bark, and camphor, which I have sometimes applied with advantage to mortified parts: but nothing was of any avail; they all sunk in the short space of time already mentioned.



This fever I considered to be of the same type as that which occasioned so great a loss to our army, after their retreat from Talavera to the frontiers of Portugal, in 1809.\* It was the bilious remittent, arising from marsh miasma, such as we experienced on the banks of the Guadiana river, which runs through the province of Alentejo, where our army went into cantonments. The biliary and other secretions were much deranged; and lumbrici were discharged by the mouth, as well as by the bowels. The treatment which I found most

---

\* The want of an efficient Medical Staff, which was quite inadequate during the whole course of the Peninsular war, was never more felt than at this time. In the battle of Talavera, the 45th Regiment, of which I was then Surgeon, lost more than 200 men; and, after our retiring to the position on the Guadiana, near Elvas, between two and three hundred more were soon affected with that destructive fever. Being without any assistant, it was absolutely necessary for me to use exertions far beyond my strength, although then in a very weak and exhausted state from incessant attendance in the Regimental Hospital. This terminated in a severe attack of the fever I have spoken of, which, being attended with every bad symptom, very nearly proved fatal; and, from having lain many days in a state of total insensibility, my recovery was considered to be almost a miracle.

successful was, by mercurial purgatives, such as calomel and jalap, or calomel and rhubarb, and sometimes by blood-letting, when there was much excitement at the commencement. Blisters also were used to relieve particular symptoms. The cold affusion was employed in some cases, but not successfully. The dissections which were made, shewed that the viscera of the thorax and abdomen were, in general, more or less inflamed. The modified antiphlogistic treatment was pursued throughout the whole course of the fever, but when debility was evident, wine, &c., was more freely administered.

It has been said, that, in Hospital Gangrene, when all other means fail, amputation may be performed with success, and even at a time when the gangrene is extending.

There is one form of Hospital Gangrene, which appears to be entirely local, at least in the commencement; and I have sometimes seen very great

destruction done by it, without the constitution being much affected, viz., the Phagedenic form of the disease; in which I have no doubt that the operation may be performed, and without any risk of the disease returning, or affecting the stump; but, in the other form of the disease, viz., the sloughing form, which has been named Contagious Gangrene, in which there is always inflammation, to a greater or less degree, with fever, I consider such practice to be extremely dangerous, and contrary to all the rules which have ever been laid down on this subject.

The operation, in my opinion, should never be thought of, until the fever and inflammation abate; and then, in all probability, the progress of the gangrene will be found to be stopped.

The following are three tabular returns of the Cordiliera Hospital, for the months of October, November, and December 1813, which I signed as senior Medical Officer, when the charge of that establishment, for the time, devolved upon me.

They will give a pretty good idea of the extent to which the gangrene prevailed, and of the comparative efficacy of the different modes of treatment that were employed.

The Hospitals at Bilboa were opened in July 1813, after the battle of Vittoria; and from that time to October following, the monthly loss at the Cordileria alone had never been below 80, and it was then, only for the first time, that the antiphlogistic treatment was introduced.

*Tabular View of the Monthly Return of the Cordileria Hospital, from 21st September to 20th October 1813 inclusive, before the Antiphlogistic Treatment was established.*

DISEASES.	Remained last Return.	Since admit- ted.	Total.	Discharged.	Died.	Proportion of Deaths to dis- eases treated.	Remaining.
Vulnus, . . .	872	422	1294	384	83	1 to 15	827
Total, . . . .	872	422	1294	384	83	1 to 15	827

*Tabular View of the Monthly Return of the Cordillera Hospital, from 21st October to 20th November 1813 inclusive, when the Antiphlogistic Treatment was partially established.*

DISEASES.	Remained last Return.	Since admitted.	Total.	Discharged.*	Died.	Proportion of Deaths to diseases treated.	Remaining.
Vulnus, . . .	827	30	857	213	25	1 to 34	619
Total, . . . .	827	30	857	213	25	1 to 34	619

*Tabular View of the Monthly Return of the Cordillera Hospital from 21st November to 20th December 1813 inclusive, when the Antiphlogistic Treatment was fully established.*

DISEASES.	Remained last Return.	Since admitted.	Total.	Discharged.	Died.†	Proportion of Deaths to diseases treated.	Remaining.
Vulnus, . . .	619	172	791	67	6	1 to 131	718
Syphilis, . .	...	5	5	...	...	.....	5
Total, . . . .	619	177	796	67	6	1 to 131	723

\* Of this number, 59 affected with gangrene were transferred to another Hospital.

† The deaths which occurred this month were rather from exhaustion and hectic fever than from gangrene.

These Returns are not so complete as could have been wished, inasmuch as they do not state the number of cases of gangrene which prevailed at any one time. Were I, however, to hazard an opinion upon this point, I should, perhaps, not be far wrong in estimating the numbers who were affected with this disease, from first to last, and in a greater or less degree, to be two-thirds, or three-fourths, of all the patients admitted ; for, at one period, the whole Hospital was literally overrun with it.

Dr Hennen says, "Every sore in the house assumed a malignant character, and the deaths increased in nearly a threefold proportion," p. 214 ; but, it was truly gratifying to see, how soon the malignant character of the disease was changed on the introduction of the antiphlogistic treatment ; the symptoms became more mild, and the deaths decreased almost immediately.

In the month of November, I considered the disposition to gangrene to be in a great measure cor-

rected. However, a few cases still remained, mild, indeed, compared with those which formerly existed; and these the Deputy-Inspector, Dr Charles Forbes, who superintended at the station, in his anxiety to clear the hospital of this disease, removed to a house appropriated for the reception of gangrenous cases,—a measure which he then thought to be necessary.

I have thus endeavoured to give a concise view, very imperfect, it must be admitted, of Hospital Gangrene, such as I have met with in military practice; an affection which, even in civil life, is at times sufficiently formidable; but which, in many instances, has occasioned the most serious consequences to our fleets and armies.

Having had opportunities of witnessing the disease, such as, I believe, have fallen to the lot of but few, I have thought proper to lay before the Profession all the information I have acquired on this subject, as well from observation as from books, in



the hope of its being useful, at some future period, to those who may hereafter be employed as I myself have been.

The subject, indeed, might be much extended, but I am not aware that I could add any thing of importance to what is now submitted ; and though in this disease, which appears under different forms, depending also on so many different causes, much must still be left to the judgment of the practitioner, yet there are sufficient marks, I think, to guide us in the treatment of it, so that we need seldom commit any very dangerous mistake.

From the inquiries, then, into this subject, which have of late been made by so many individuals, it is, perhaps, not unreasonable to expect that considerable good must arise ; that the sufferings of the defenders of our country shall, in time to come, be much alleviated ; that the great loss which has so often happened to the Naval and Military Services of the state shall be lessened ; and that, in short, some benefit shall thereby be conferred on Society.



## APPENDIX.

Having, in the foregoing short Essay on Hospital Gangrene, endeavoured to shew the beneficial effects which have been, and may be, derived in that formidable disease, by employing the Anti-phlogistic, instead of the Stimulating Treatment, which so long obtained in Army practice ; and having seen how extensively applicable that remedy is to other diseases of the Army, especially in febrile and inflammatory affections, both external and internal, to which the soldier is liable, it will not, I trust, be much out of place here, to record, in the form of an Appendix, a very few cases, further shewing the advantage I have experienced from the Anti-phlogistic regimen in that class of diseases.

## APPENDIX.

---

### CASE I.—THE ANTIPHLOGISTIC TREATMENT IN PNEUMONIA.

IN the spring of 1806, when paying my evening visit to the Regimental Hospital of the 28th Regiment (in which I was then Assistant-Surgeon), at that time quartered in Woodbridge Barracks, Suffolk, I found a man sitting up in bed, breathing very heavily, coughing incessantly, and bending forwards, gasping for breath. On approaching his bed, I saw he was livid in the face, and complaining of most distressing pain in the chest, which prevented his breathing. It was a severe attack of pleuro-pneumonia, with which he had been seized about three hours before. I immediately opened a vein in the arm, and drew off, in a full stream, about four pounds of blood. He became faint, the pain nearly ceased, and he could breathe with freedom. I removed the bandage and bound up the arm. He could now lie down, and felt himself quite relieved. On returning to him in about an hour after, I found that reaction had commenced, the pulse was rising, and the pain of the chest and cough were returning.

---

*The Antiphlogistic Treatment in Pneumonia.*

---

I took another pound of blood from his arm, he again became faint; the bleeding was then stopped, a blister was ordered to the breast, and the most rigid antiphlogistic treatment was enjoined. Next morning I found that he had passed a good night, and was quite free from fever and pain, and could breathe freely; pulse and heat of skin natural. Some mild aperient medicine was prescribed, and he required no more active treatment. In a few days after he was quite well, and able to quit the hospital.

## CASE II.—PNEUMONIA.

In the summer of 1807, when quartered at Maldon, in Essex, a serjeant of the 28th Regiment, who had been absent for some time on furlough, was brought to the Regimental Hospital, apparently in a dying state. The account which I got of his case was, that about five weeks before he had been seized with severe pain in the breast, cough, and difficulty of breathing. Being absent from his regiment, and there being no doctor at hand, he had not received any medical assistance except from his friends with whom he lived. He was a tall stout man when in health, but had become quite emaciated, with a hectic flush in his cheeks, his brow covered with perspiration, skin hot, cough and dyspnœa distressing; pulse fluttering;

---

*The Antiphlogistic Treatment in Pneumonia.*

---

very indistinct ; scarcely to be felt, and great debility ; appetite gone, and constant thirst. He had taken some doses of aperient medicine by the advice of his friends.

From the alarming state in which he was, I thought it almost useless to do any thing ; and, indeed, I felt at a loss what to do. Some cordial drink was given by way of reviving him, but without the desired effect. I was, however, unwilling to leave the poor man to his fate without trying some means to relieve him. There was, apparently, no effusion into the cavity of the chest, nor did I think that suppuration, or any organic change, had taken place. It appeared to me, on considering the subject attentively, that it was a case of chronic inflammation, and congestion of the lungs impeding the action of the heart, and occasioned by the neglect of bleeding in the acute stage of the disease ; and I thought it possible, if the respiratory organs could be relieved, that the heart might then act with greater effect, the pulse become more free, and the pulmonic symptoms be alleviated ; and that I should be guided, in the treatment to be followed, by the rising or sinking of the pulse.

I resolved to open a vein in the arm, and to watch its effect by keeping my finger constantly on the wrist. After a few ounces of blood were drawn, I was sensible that the pulse was more distinct. That encouraged me to go on, and I drew off about ten ounces. The arm was then

---

*The Antiphlogistic Treatment in Pneumonia.*

---

bound up. He bore the bleeding well, and was certainly not worse after it. Seeing now my way more clearly, I determined to follow up that practice.

Next day I found that he had had some rest in the night ; and, if any thing, that he was rather better. A greater quantity was now taken—about sixteen ounces ; the pulse became more distinct, and the respiration more free. The following day sixteen ounces additional were taken. On every bleeding, I was sensible that the pulse became fuller and stronger ; the cough and the breathing also was freer, and, instead of being weakened, his strength improved ; his appetite was now better, and he could take a little farinaceous food, such as sago, or arrow-root. The pulse at last became remarkably full and strong, so that I found it necessary to repeat the operation, and to take blood still more freely.

Some days I took as much as two pounds at a time, and evidently with benefit. Digitalis was employed to bring down the pulse, but without effect. It disordered the stomach and was given up. Blisters also were applied to the chest with benefit ; but my principal reliance was on the lancet. In this way I went on, from time to time drawing blood according as the symptoms seemed to require, till at the end of six weeks, he had lost the extraordinary quantity of eleven pounds (or one hundred and seventy-six ounces) of blood. The pulse was now

---

*The Antiphlogistic Treatment in Pneumonia.*

---

reduced to a natural state, and the pulmonic symptoms nearly gone; the appetite was improving every day, and his strength returning. He was again getting stout, and going about the hospital. I now considered him convalescent.

On the 1st of August, the Regiment got a sudden order to embark for Copenhagen; and as this man could not be expected to be fit for service for some time to come, he was left behind, with some others who were on the sick list. Returning to England in about three months afterwards, I found myself promoted to another regiment (the 45th), which I joined immediately; so that I never had an opportunity of seeing the sergeant again. It was one of the most extraordinary cases I ever met with, and a most wonderful instance of resuscitation brought about by such uncommon means.

## CASE III.—PNEUMONIA.

In the year 1821, I was called upon to visit Major Vernon, formerly of the Scots Greys, at that time residing near Musselburgh. I found that, three days before I saw him, he had experienced a severe attack of pneumonia. He was attended by two celebrated men, viz., Mr Brown, Surgeon of Musselburgh, an able and experienced practitioner, well known for the part he took in the vaccine con-

---

*The Antiphlogistic Treatment in Pneumonia.*

---

troversy, and Mr Moir, his partner, no less celebrated,—the author of a work on the Ancient History of Medicine, and known in the literary world as the writer of many beautiful pieces of poetry (in Blackwood's Magazine) under the signature of "Delta."

Mr Brown, being the senior partner, and an old friend of the Major, took the principal charge of the case.

I had scarcely reached the house when Mr Brown arrived to pay his evening visit. The patient had been bled several times before I saw him. He was bled again that evening by Mr Brown; but, in these different bleedings, he had not lost more than thirty ounces of blood. As the family were very much alarmed at the state the Major was in, they requested me to remain all night, which I agreed to do. About two o'clock in the morning I was informed that our friend was become much worse, and wished to see me; that although none of the family imagined any thing more could be done, yet, that it would be a satisfaction to them were I to see him. I rose immediately and found him certainly very ill,—gasping for breath, face much flushed, with an incessant cough, great pain in the chest, with dyspnœa, and unable to lie down.

Without a moment's delay, I drew off, suddenly, about three pounds of blood from the arm. He became faint, and I then stopped the flow of blood; he was quite relieved, lay down in bed, and passed the remainder of the night comfortably. In the morning, when Mr Brown came to



---

*The Antiphlogistic Treatment in Pneumonia.*

---

visit his patient, he was pleased to find him so much better; and when he was told what had happened in the night, and saw the quantity of blood that had been drawn, he was much astonished. The blood was cupped, and had a firm crust of fibrine, more than an inch thick, on the surface. The inflammatory action, however, was not yet subdued, and it was agreed that, if the pain at all returned, more blood should still be drawn. Towards the afternoon, the pulse again began to rise, and the pulmonic symptoms were more distressing. Another pound of blood was taken, a degree of faintness came on, he became again more quiet; and from that time, I may say, his convalescence commenced. He was all along kept on the most strict antiphlogistic regimen; he had been blistered on the breast, and had taken aperient medicines, before I saw him, and in a short time he was perfectly well.

Major Vernor had been a patient of mine at Brussels, for a severe wound he received from a musket-ball, at the battle of Waterloo, through the right shoulder-joint, which injured the head of the humerus, and from which, by blood-letting and the antiphlogistic treatment, he recovered without any operation, and for which he was ever after very grateful. In the year 1827, he had another attack of pneumonia, which terminated fatally during my absence in London. He was a good man, and an excellent officer. By his death I lost a sincere friend, and one whom I highly esteemed.

---

*The Antiphlogistic Treatment in Ophthalmia.*

---

## OPHTHALMIA.

This is a disease in which I have found it necessary to carry the antiphlogistic treatment to the utmost extent.

In the year 1806, on the return of the 28th Regiment from Hanover, a violent purulent ophthalmia appeared in that corps, then stationed at Woodbridge, Suffolk; and it had prevailed to a great extent, for some time before, among the troops in the eastern district of England, but particularly in the 52d, 79th, and 92d Regiments. It had all the appearance of the Egyptian Ophthalmia, and, as I had seen much of that disease in Egypt, during the campaign of 1801, and had suffered a severe attack of it in my own person, my attention was particularly directed to it. It was characterised by most violent inflammation of the eyeball and eyelids; the conjunctiva was raised, in many cases, nearly half an inch above the surface of the eyeball, so as completely to conceal the cornea, and was like a fungous growth or fleshy excrescence, and the eyelids were so much swollen that often the eyeball could not be discovered at all; in many instances, the lining membrane of the eyelids was so elongated, that it hung down like a piece of raw flesh upon the cheek, giving the person a most hideous appearance; a great discharge of purulent matter took place from the commencement, the pain was most intense, and the intolerance of light was excessive; febrile symptoms were

---

*The Antiphlogistic Treatment in Ophthalmia.*

---

almost always present from the beginning ; the progress of the disease was often so rapid, that in the course of a few hours, or in one night, the eye was found sometimes to be destroyed ; suppuration frequently took place in the ball of the eye, and, bursting, the whole contents of the eye were discharged ; often specks of great thickness formed on the cornea, so as to occasion total blindness. Though I had seen a great deal of the Egyptian ophthalmia during the time I was in that country, yet I found no difficulty in treating it ; moderate bleeding, and the antiphlogistic regimen, even in severe cases, never failed in due time to cure the disease ; and, although a very great number of the soldiers of the 28th Regiment, and some of the officers also, were affected by it in Egypt, very few lost an eye, and there was not one instance of any one losing both eyes.

It was very different in the case I am now describing. In a few months after the disease appeared, not fewer, I think, than 200 men lost the sight of one or both eyes, and the greater part were discharged and invalided, but a great many blind still remained ; these last were not discharged, and, ultimately, most of them recovered. I shall shortly relate the practice which was pursued, and that was, bleeding to the greatest possible extent ; and, had not that been done, many, I am convinced, must have lost their lives by the inflammation extending to the brain. My rule was, to bleed till syncope was produced ; and I have often taken

---

*The Antiphlogistic Treatment in Ophthalmia.*

---

as much as four or five pounds of blood at a time before that object was attained. In the course of a very few days I have bled individuals to the extent of five, six, and seven pounds, and by such means the progress of the disease was often stopped; but the long continuance of that formidable malady, and the destruction it was occasioning, caused the greatest alarm in the highest quarters, and seemed to threaten the efficiency of the army.

The whole Medical Board were sent to investigate the subject; and Mr Knight, Mr Keate, and Sir Lucas Pepys, came down to Maldon, where the Corps to which I was attached was stationed, and they were so satisfied with the treatment pursued, that they encouraged me to persevere in the same. Mr Ware, and other eminent Oculists in London, were consulted; but they could suggest nothing more in addition to what was already done. Several pamphlets were written on the subject; one by the late Dr Vetch, and another by Mr Peach, surgeon of the 52d Regiment. Mr Webb (now Sir John Webb), Deputy-Inspector of Hospitals, was the superintending medical officer of the district, and, for his services on that occasion, was removed to the Ordnance, as Director-General of the Medical Department; Dr Vetch, at that time an Hospital-Assistant, attached to the 52d Regiment, was advanced to the rank of Physician to the Forces; and my humble services were honoured by promotion to the Surgeoncy of the 45th Regiment. Mr Knight was ever ready to acknowledge services, and never

---

*The Antiphlogistic Treatment in Syphilis.*

---

failed to reward those who at any time distinguished themselves in the performance of their duty. He held out great encouragement to medical officers to exert themselves, and his leaving office was much regretted by many, and was considered a great loss to the medical department of the army. He was also an upright man, and possessed much influence, and had the good of the service at heart.

With the exception of the gangrene at Bilboa, nothing that occurred during my service in the army ever interested me so much as the ophthalmia; and I believe that on no occasion was bloodletting and the antiphlogistic treatment ever carried to a greater extent.

## SYPHILIS.

Among the many improvements which have been made, of late years, in the practice of Medicine and Surgery, not the least in importance is that which has obtained in the treatment of Syphilis. They who recollect what the practice in that complaint was forty or fifty years ago, must acknowledge the happy change which science has effected in the cure of that affection. The long-continued debilitating courses of mercury to which all were obliged to submit who hoped for a cure, and which were considered to be indispensable, even in the slightest affections of that kind;—together with the apprehension of the disease

---

*The Antiphlogistic Treatment in Syphilis.*

---

breaking out, at an after period of life, and descending through their posterity even to distant generations, kept many who had been so unfortunate as at any time to be affected by it, in dread all their lives after. That fear has now subsided, when they are assured, that the consequences which they formerly so much dreaded, were the effects of the means they had used for a cure of the evil, more than of the disease itself; and that the malady may be successfully treated, on the antiphlogistic principle, without mercury, or, at most, with a very small quantity.

I had long been sensible of the destructive practice of exhibiting mercury in such quantities as to produce salivation, and continuing it so long, by repeating course after course, as to have the effect, in many instances, not only of ruining the health of the individual, but often of hurrying the unfortunate sufferer to an untimely grave. An opportunity at last presented itself, whereby I was enabled to put my views on this subject to the test, on a somewhat extended scale.

In the summer of 1808, soon after I had joined the 1st Battalion of the 45th Regiment, then stationed at Middleton, near Cork, in Ireland, a detachment of 150 men arrived from the 2d Battalion quartered at Nottingham. On examination, I found that about fifty of the number were affected with primary symptoms of Syphilis. In a very few days afterwards, the corps received an order to embark for foreign service, and it was thought that Portugal was our



---

*The Antiphlogistic Treatment in Syphilis.*

---

destination. The orders were, that no sick were to be taken on board ; but, as leaving fifty men behind, in addition to those who were seriously ill, and could not be embarked, amounting to about twenty more, must have considerably reduced the strength of the Battalion, which mustered only about 600 men, I proposed to the late Lieutenant-General Guard, who was then the Lieutenant-Colonel in Command, that all these men should be embarked in the head-quarter ship, in order that I might have the management of them myself, and he very readily gave his consent.

They were all treated on the modified antiphlogistic principle ; and, as I did not imagine at that time that Syphilis could be cured without *some* mercury, they were put on an alterative course, carried just so far as slightly to affect the mouth. By the time that the fleet reached Portugal, in about a fortnight afterwards, the sores, in most of them, were healed ; but, even in those where they remained open, the men were landed, and did their duty from the day of disembarkation, and they all afterwards got well by simple topical applications. It was my intention, had secondary symptoms appeared in any of them, to have taken such cases into hospital on the first convenient opportunity ; but, to my great joy, it was not necessary, not one instance of secondary affection having ever occurred. They all enjoyed the best health ; and, what is remarkable (and I

---

*The Antiphlogistic Treatment in Syphilis.*

---

think worthy of being recorded), none of these men suffered from the fevers of the country, as the others did who had not used mercury; owing, I imagine, to the salutary effect which that remedy had in acting gently on the liver, and causing a healthy secretion of bile, a deranged state of which seems to be a constant attendant upon, if not the cause of, many of the fevers of hot climates.

Had inflammatory symptoms run high in any of the patients, or sloughing taken place, I should have had recourse to venesection, and subjected them to a very strict antiphlogistic regimen, omitting, at the same time, the use of the mercury; but these measures were not necessary,—the modified antiphlogistic treatment was quite sufficient.

It is still a question, whether the non-mercurial treatment, strictly so called, or the alterative course, is the most beneficial, and which of them ought to be followed. I have seen both tried, and I am convinced that the cure may be accomplished by either; but the antiphlogistic treatment, with the alterative mercurial, will effect the object much sooner than the other. I should, therefore, prefer the mode of treatment which I adopted, and found so successful, forty years ago.

I have been confirmed in this opinion, by a conversation I lately had with a very intelligent Surgeon of the Honourable East India Company's Service, (Dr Leckie of the Bengal Establishment), who had been long in India, and



---

*The Antiphlogistic Treatment in Syphilis.*

---

who assured me, that, in his experience he found the alterative course effected the cure in a much shorter time than the non-mercurial; and, also, that he never observed the least injury to the constitution from the use of mercury in so small a quantity.

In Gonorrhœa, when the inflammation is great, the antiphlogistic treatment and venesection ought to be employed, and when the irritation is subdued, copaiba, or cubebs, will speedily complete the cure; but, when the symptoms are moderate, these substances may be used from the first with the utmost advantage. The cure of gonorrhœa, by these simple means, is now as easily effected as that of syphilis.

---

The two following cases, with a few preliminary remarks, intended to establish some points in the practice of Surgery, shew, at the same time, the efficacy of the antiphlogistic treatment in the prevention, not less than in the cure, of Hospital or Contagious Gangrene, and afford a striking contrast with a case treated on a different principle, recorded at pages 70, 71, 72 of the Essay, to which the reader is respectfully referred.

#### GUN-SHOT WOUNDS.

Insulated cases often become extremely valuable in establishing general doctrines, or in illustrating practical

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

rules in medicine ; for, by supplying one link in the chain, they enable a series of facts to be classed together, with which no connection had previously been established. On this account, the following case may not be considered unworthy of being recorded ; for, although the use of a Seton, in this instance, could have afforded no probable grounds for suggesting the practice, as a general one, in un-united fractures, yet it shews the utility of it under particular circumstances, and may corroborate some of the facts and observations made by others in cases somewhat similar.

(1.) At the battle of Orthez, which took place on the 27th of February 1814, Major Gray of the 95th Regiment, now the Rifle Brigade, received a musket-shot through the right leg. The ball entered on the anterior spine of the tibia, two inches and a half from its articulation with the foot. It passed obliquely outwards through the substance of the tibia, injured the fibula, and came out towards the exterior edge of that bone. The healing process went on, without any interruption, for one month ; during which time several small exfoliations took place. At this period, when walking in the room with crutches, he suddenly fell, and fractured both bones at the site of the wound. A most violent attack of inflammation immediately succeeded, accompanied with such a degree of general fever as to pro-

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

duce delirium. Fomentations and poultices were applied to the wound, and large evacuations of blood, with a rigid antiphlogistic treatment, were employed. By these means the inflammatory symptoms were subdued, healthy supuration came on, the cure again went on progressively, the bones had apparently united, the outer wound had entirely healed, and the inner had nearly cicatrized. At this time, being about two months from the date of the fracture, the limb began to swell; the discharge, from being of a good consistence, became thin and watery, and he felt at times slight rigors, a complete stop being thus put to the process of consolidation in the bone, and to the healing of the soft parts.

On introducing a probe into the anterior wound, it passed through a canal in the substance of the tibia, and the point could be felt at the cicatrix of the exterior wound. As it was conceived that the ossific process was not likely to be completed, and that the discharge of matter produced not only much uneasiness, but a great deal of general irritation, a seton was introduced, which entered the anterior wound, passed through the canal formed in the bone, and was brought out at the cicatrix of the exterior wound. A most favourable change took place almost immediately. Many small portions of bone were brought away by the seton, which was drawn through every day; the discharge soon lessened in quantity, and became again

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

of good consistence ; the swelling of the limb also subsided entirely. As the canal in the bone filled up, the seton was gradually lessened, till at last, about five weeks from the time of its introduction, it was altogether withdrawn. Both wounds healed up soon after. The limb remained somewhat shortened, but the union of the bone was at this time completed.

This case was read before the Medico-Chirurgical Society of London (May 14, 1816), and published in the seventh volume of the Transactions of that Society.

I had an opportunity, in 1815, of again using the seton successfully in several cases of a similar description, in the Hospitals at Brussels after the battle of Waterloo ; and I learned from others, who used that remedy at my recommendation, that they found it a most efficient mean whenever it was tried. I was not, in 1814, aware that a seton had ever before been used by any one in such cases. In Major Gray's case, it struck me as being an instrument very likely to accomplish the object in view ; and I was much gratified to find afterwards that it had been employed by others to the same end, and nearly about the same time. In the Transactions of the Medico-Chirurgical Society of London, I find several cases of the same kind recorded.—(Vols. v. and vii.).

Gun-shot wounds of the extremities, when complicated

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

with compound fractures and splintering of the bones, are justly regarded as most serious injuries, so much so, that the hope of saving a limb under such circumstances is seldom entertained; for, independent of the danger of mortification, which, in the first instance, is always to be apprehended, and the chance of the patient ultimately sinking under the irritative fever, together with the tedious and exhausting suppuration which, at a later period, is also to be taken into consideration, the limb in the end must often be useless, and by no means a compensation for the anxiety, trouble, and risk attending the attempt at saving it.

For these reasons, few surgeons are willing to undertake the treatment of such accidents, and they are, consequently, almost always looked upon as legitimate causes for amputation.

Though in very severe wounds of this description, the practice of immediate amputation is certainly the safest, and, as a general rule, ought, I conceive, in most instances to be followed, yet cases at times do occur, where this rule may be deviated from; and when the constitution of the patient is sound, and circumstances in other respects are favourable, I am persuaded that, even in the more severe injuries of this kind, a successful result may often be expected.

The following case of more than ordinary severity,

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

which I now submit, will shew what Nature is capable of accomplishing; and it may, perhaps, be an encouragement to some to persevere in their endeavours; and a caution to others not to decide too hastily on the amputation of a limb, until, at least, a reasonable attempt has been made to preserve it. At the same time it is but fair to confess, that, were I ever again called upon to an injury of a similar nature equally severe, I would not so readily undertake the treatment of it, with a view to the preservation of a limb. Subsequent reflection has convinced me, that it would be injudicious, unless in patients of the higher ranks, and placed under the most favourable circumstances, with all the conveniences and comforts of life at command, as was the case in the present instance; for, although this case terminated favourably, and a perfect recovery was the result, yet I by no means hold it out as an example for general imitation, more especially in hospital practice, and I now bring it forward, rather as an uncommon instance of what may sometimes happen, than as an occurrence which, in military practice at least, is often to be looked for.

(2.) On the morning of the 19th June 1815, *after the Battle of Waterloo*, I was called upon to visit Lieutenant-Colonel Lluellyn of the 28th Regiment of Infantry (now Major-General Lluellyn), who was reported to me to have



---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

been severely wounded in the action of the preceding day. The account which the Colonel gave me was, that, while employed in front with a party of his regiment acting as sharpshooters, he observed a rifleman of the enemy, at the distance of about fifty or sixty yards, take a deliberate aim at him ; the shot struck him on the leg, and he immediately fell ; he was carried off the field by two soldiers, and conveyed to Brussels during the night on a car. He was extremely anxious to save his leg, while, at the same time, he was willing to submit to any thing that was thought most advisable.

On examination, I found that the ball had entered on the forepart of the right leg, about mid-way between the knee and ankle-joint, and appeared to be lodged there. It had struck upon the internal flat surface of the tibia, close to the anterior ridge or spine ; and caused an oblique fracture and splintering of both the bones. The patient was little more than thirty years of age, of a slender form, remarkable for his temperate habits, of a sanguine disposition, and very active mind ; he had for a considerable number of years enjoyed excellent health ; his spirits were not in the least depressed by the injury he had met with ; and his pulse was perfectly calm and natural. He had suffered excessive pain in his removal to Brussels, but after he was laid in bed, he felt comparatively easy. I told him, considering the very severe nature of the wound, the bones



---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

being so much splintered, that, in my opinion, perhaps the safest plan would be for him to submit at once to the amputation of the leg; at the same time, I said that such a measure did not appear to me to be absolutely necessary at that very moment, and that, if he chose, I would make an attempt to save the limb, keeping in view amputation as a last resource, should circumstances at any time seem to render it indispensable. To this he very willingly agreed. As there was no inflammation present, the wound was dressed simply; an eighteen-tailed bandage was applied, and the limb was put in splints. The modified antiphlogistic regimen was at the same time prescribed.

No material change took place for several days, except that the patient complained of a constant pain on the fore-part of the leg, from a sharp point of bone, which projected; threatening to ulcerate the skin, and causing such irritation as to deprive him entirely of rest.

I intended at first to have sawn off that projecting point; but upon laying hold of it with my fingers, after making an opening in the skin, I found a large portion of the tibia quite loose; and conceiving that there was but little chance of its adhering, I determined at once to remove it. Accordingly I laid open the skin from a little above the wound to within an inch of the ankle-joint; and with very little trouble extracted the loose portion of bone. It was much larger than I had imagined, measuring four and a

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

half inches in length, and from a sharp tapering point at the upper part, it became gradually thicker, till it involved nearly one-half of the whole thickness of the tibia, and again became more pointed towards the ankle-joint.

It was the opinion of many at that time who were present, that, in so shattered a state of the limb, so large a fragment of bone never could be regenerated, and that amputation ought to have been performed; but the patient was still very unwilling to agree to it; and from having before witnessed similar extraordinary cases, I was by no means inclined to insist upon it.

The wound was then dressed with dry lint, with a pledget of emollient ointment over it, and, above all, a compress of fine tow. The eighteen-tailed bandage and splints were again applied, and he afterwards felt much easier than he had been at any time since he received the wound. There was still no tendency to fever, and every thing went on as well as could reasonably be expected; the wound suppurating freely, and requiring to be dressed twice a-day. The aperture by which the ball entered was so small that it was found necessary to dilate it by sponge-tent, and at every dressing a probe was introduced, and all detached portions of bone were removed by the forceps, whenever they could be laid hold of; and in that way upwards of twenty pieces, some of them of very considerable size, were extracted at different times. The ball remained con-

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

cealed for several weeks, but at last it was felt on the fibular side, just under the skin, and an incision being made, it was easily removed.

The limb had all along been kept extended, resting on the heel, and was doing so well, that, after six weeks, it was thought a change of position might be allowed. The patient was accordingly turned on his right side, with the knee bent, and the leg then rested on the fibula; but I had soon reason to regret having made any alteration, for next morning a very great degree of inflammation, accompanied with violent fever, had supervened, and I was really afraid that Gangrene might have been the consequence.

Suspecting the change of posture to have been the cause of all the mischief, I had the patient immediately restored to his former position; twenty ounces of blood were drawn from the arm; cold lotions applied to the wound and the whole limb; a saline cathartic was prescribed, and the most rigid antiphlogistic regimen enjoined; by adhering to which, for a few days, I had the satisfaction to find the inflammation and fever abate, and the state of the patient was soon again pretty much the same as before the accession of those alarming symptoms.

The wound was still discharging a very considerable quantity, so as always to require dressing twice a-day. The pus was of good quality, but no appearance of conso-

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

lidation could be observed, even at the expiration of three months from the date of the injury.

After that time, however, the purulent discharge began to lessen ; the spiculæ of bone appeared to be all removed, and very soon afterwards osseous matter was secreted, and the union of the bones became so complete, that the leg could be moved with safety, and handled with the greatest freedom.

In little more than four months from the time of the accident the large piece of bone which had been removed was completely renewed, its regular shape preserved, and the wound cicatrized ; the aperture which had been made by the ball only remained open, and it was kept so purposely to guard against the chances of any detached portions being inclosed, and with a view to prevent future exfoliations. At this time, about five months from the date of the injury, and when the patient's recovery was considered to be no longer doubtful, I was obliged, in consequence of indisposition, to entrust the charge of this interesting case to another medical gentleman, my friend Mr Collier, at that time Surgeon to the Forces, now Inspector-General of Army Hospitals.

I have had opportunities of seeing the Colonel since that time, and it affords me great pleasure to say that he continues to enjoy the best health, and that he has a perfect use of the leg, although it is somewhat shortened.

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

Though it is chiefly as it relates to the Practice of Surgery that I wish to consider this case ; yet, in a physiological point of view, it is likewise very instructive.

From the number and size of the fragments of bone which were extracted, it is evident that a very great proportion of the whole cylinder of the tibia, to the extent of several inches, must have been removed ; yet, in the course of little more than four months, we find that that great loss was completely repaired by the secretion of callus, the symmetry of the bone preserved, and the function of the limb eventually restored ; affording, perhaps, as beautiful an illustration as any which has been recorded, of the power with which living bodies are endowed, of repairing the injuries and disorders to which they are liable, from external violence, or other causes, and which has been termed the Reproductive or Restorative Principle.

Before concluding, I may remark, that it was from a previous knowledge of this officer's sound constitution and temperate habits, more than from any other consideration, that I was induced to make the trial which I did, under apparently so unpromising circumstances.

Had hectic fever, or any great disturbance of the system, been at all manifest, I should not have been justified in persevering in the attempt ; fortunately, however, with the exception of what has been mentioned above, and which could be traced to its cause, no unfavourable symp-

---

*The Antiphlogistic Treatment in Gun-shot Wounds.*

---

tom at any time occurred, and the result has been as already described.

This case excited very considerable interest, and was seen by almost every medical gentleman then in Brussels ; by my late friend Dr Thomson, at the time of his visit to Belgium ; and I, with many others, who benefited by his able advice on that occasion, have great pleasure in acknowledging the assistance and encouragement I received from him, when the result was looked upon as very uncertain. It was seen also by Dr Somerville, then a member of the Army Medical Board, Mr Guthrie, and the late Sir Charles Bell, during their stay at Brussels ; and frequently by the late Dr Hennen, Surgeon to the Forces, afterwards Inspector-General of Army Hospitals, Mr Gunning, Surgeon-in-Chief, and Mr Brownrigg, Surgeon to the Forces ; and to all these gentlemen, but most particularly to Mr Brownrigg, I consider myself indebted for their very friendly advice and assistance.

General Lluellyn's case was read before the Medico-Chirurgical Society of Edinburgh, and published in the second volume of their Transactions, in 1826.

